Journal Title Here, 2022, 1–49
doi: DOI HERE
Advance Access Publication Date: Day Month Year
Paper

Accommodating number neutrality in Alasha Mongolian: Markedness and semantic interpretation

Luis Miguel Toquero-Pérez*

Modern Languages and Literatures, California State University Fullerton, 800 N. State College Blvd, Fullerton, 92831, CA, USA

*Corresponding author. ltoqueroperez@fullerton.edu

FOR PUBLISHER ONLY Received on Date Month Year; revised on Date Month Year; accepted on Date Month Year

Abstract

Morpho-syntactic markedness for number does not always seem to align with a singular or plural semantics. I show that in Alasha Mongolian (Mongolic) unmarked inanimate nouns are number neutral whereas their animate counterparts are strictly singular (cp. Bylinina and Podobryaev 2020). Unmarked inanimates, however, can be strictly singular if modified by a subclass of APs (e.g. *big*) and numerals. Plural-marked nouns can be exclusively or inclusively plural depending on upward/downward entailingness (like English). Adopting Harbour's (2007, 2011, 2014) theory of number, I propose that the generalizations are best explained if unmarked number neutral nouns lack NumP, which would otherwise mark the NP for [±atomic], whereas their animate counterparts always project it. I argue that inanimates may project NumP if there is morpho-syntactic evidence to do so (some APs, overt plural-marking, and numerals). In addition, I propose a new solution for the inclusive/exclusive ambiguity of the plural: it is the result of syntactically conditioned allosemy at LF. Last but not least, the results of the analysis paired with cross-linguistic observations about number give rise to a novel generalization that correlates morphological markedness and semantic interpretation.

Key words: morphological markedness, plurality, NP syntax, numerals, adjectives, Mongolian

1. Introduction

Languages often make a morpho-syntactic distinction between singular and plural marking on nouns. From a semantic point of view, what counts as a singularity or plurality does not always align with morpho-syntactic markedness.[1] Let's consider the forms in (1) from Western Armenian and those in (2) from English.

[1] From now on, I will be using the labels 'singularity' and 'strictly singular' as synonyms to refer to singular semantics (i.e. set of atoms). I will use the label 'plurality' to refer to plural semantics (or sums of atoms). When relevant, I will indicate whether the plurality is exclusive (i.e. set of only sums of atoms) or inclusive (i.e. set of atoms and their sums). While inclusive plurals are also referred to as number neutral, I will reserve this term for unmarked forms of nouns.

(1) *Western Armenian*

a. dəgha
boy

b. dəgha-ner
boy-PL

(2) *English*

a. boy

b. boy-s

In Western Armenian, the unmarked form in (1a) is number neutral, i.e. both atoms and their sums, but the plural-marked one in (1b) is exclusively plural, i.e. only sums (Bale et al., 2011; Bale and Khanjian, 2014). In English, as opposed to Western Armenian, the unmarked form *boy* in (2a) is strictly singular, but the plural-marked one is ambiguous: its interpretation may be an exclusively or an inclusively plural one (Krifka, 1989; Sauerland, 2003; Sauerland et al., 2005; Spector, 2007; Zweig, 2009; Farkas and de Swart, 2010). As observed by these authors, the latter interpretation is found in downward entailing environments and questions. From now on, I will be using the labels U(pward)E(ntailing)C(ontext) and D(ownward)E(ntailing)C(ontext). For example, this is shown with the contrasts in (3).

(3) a. Ash fostered boys in the cabin.

i. ✓Exclusive: 'Ash fostered two or more boys'

ii. #Inclusive: 'Ash fostered one or more boys'

b. Ash didn't foster boys in the cabin.

i. #Exclusive: 'Ash didn't foster two or more boys'

ii. ✓Inclusive: 'Ash didn't foster any boys'

c. If Ash fosters boys, he can apply for food stamps

i. #Exclusive: 'If Ash fosters two or more boys, he can apply for food stamps'

ii. ✓Inclusive: 'If Ash fosters any boys, he can apply for food stamps'

The conclusion that we can draw from this is that having a morphological singular-plural distinction does not guarantee a uniform semantic interpretation. In fact, it seems that there is variation regarding the denotation of unmarked and plural-marked nouns across languages. This is schematized with the denotation of NPs that are marked or unmarked for number below.

(4) *Unmarked NP that denotes a singularity*

$[\![\text{NP-SG}]\!] = \{a,\ b,\ c\}$ English

(5) *Unmarked NP that is number neutral*

$[\![\text{NP-Ø}]\!] = \{a,\ b,\ c,\ ab,\ ac,\ bc,\ abc\}$ Western Armenian

(6) *Plural-marked NP that denotes an exclusive plurality*

$[\![\text{NP-PL}]\!] = \{ab,\ ac,\ bc,\ abc\}$ English (UEC), Western Armenian

(7) *Plural-marked NP that denotes an inclusive plurality*

$[\![\text{NP-PL}]\!] = \{a,\ b,\ c,\ ab,\ ac,\ bc,\ abc\}$ English (DEC)

However, variation in the interpretation of NPs that are marked or unmarked for number can be even more fine-grained. For example, Bylinina and Podobryaev (2020) report that in Barguzin Buriat (Mongolic) the interpretation of unmarked nouns is sensitive to animacy: unmarked inanimates are number neutral, but unmarked animates are strictly singular.[2] Plural-marked nouns behave like their English counterparts: they can be exclusively or inclusively plural depending on the upward/downward entailingness of the context. In a nutshell, a representative sample of the differences in morpho-semantic markedness in terms of number that seem to emerge across languages are summarized in Table 1. The labels SNG/PLR refer to the semantic interpretation and not the phonological form of the noun; thus, SNG refers to a 'singularity' (e.g. 1) and PLR refers to a 'plurality' (e.g. 2 or more). If a noun can refer to both, then we will say the noun is number neutral if unmarked or inclusively plural if plural-marked.

Table 1. The interpretation of number in languages with unmarked and PL-marked forms (to be extended)

	Unmarked NP		**PL-marked NP**	
	SNG	**PLR**	**SNG**	**PLR**
English	✓	*	✓	✓
Buriat (animate)	✓	*	✓	✓
Western Armenian	✓	✓	*	✓
Buriat (inanimate)	✓	✓	✓	✓

In this paper, I focus on the nominal number system in Alasha Mongolian (Mongolic).[3] I present novel data and show evidence for the following generalizations: (i) unmarked inanimate NPs are number neutral, unless modified by size adjectives, in which case they are strictly singular. (ii) Unmarked animate NPs are always strictly singular. (iii) Plural-marked NPs are ambiguous between denoting an exclusive plurality or an inclusive one, depending on whether they are embedded in an upward or downward entailing context, like in English. These facts raise a series of theoretically important questions related to nominal architecture:

Q1. Is there a syntactic difference between unmarked nouns that are number neutral and those that are strictly singular?
Q2. Where is Number encoded and what is it relationship with size adjectives?
Q3. How does the inclusive/exclusive ambiguity in the PL-marked forms emerge?
Q4. What is the relation between the morpho-syntax and semantics of number?

To answer these questions I will argue that the generalizations about the morpho-syntactic expression of number and its semantic interpretation follow directly from the syntactic structure

[2] An overview of the data is beyond the scope of this paper, though. See Bylinina and Podobryaev (2020) for details.

[3] Throughout the paper I will ignore IPA and phonetic transcription. I use the following orthographic conventions that map onto the corresponding IPA symbols. The conventions for vowels are the following: *a* = [ɑ]; *ö* = [ø]; *ü* = [ʏ]; *u* = [o/u]; *o* = [o]; *V* = [ə] or highly reduced unstressed vowels; small caps *v* is a placeholder for any vowel. Long vowels are represented with [:] after the vowel. The conventions for consonants are as follows: *ch* = [tʃ]; *j* = [dʒ]; *gh* = [ɢ]; *sh* = [ʃ]; *v* = [ʊ]; *x* = [x/χ/h]; *ng* = [ŋ]; *w* = [w].

of the nominal expressions in the language. In particular, by adopting Harbour's (2007; 2011; 2014) theory of number all nouns are underdetermined for number until Num(ber), which hosts features such as [±atomic], is merged. This entails that the difference between unmarked nouns that denote a set of atoms and those that are number neutral boils down to the presence or absence of Num (see also Kramer, 2017; Martí, 2020a): animate nouns always project Num, but inanimates need not always do so. While I diagnose the number neutrality by applying the tests commonly used in the literature (e.g. anaphoric reference, distributivity etc., Farkas and de Swart, 2003, 2010; Bale et al., 2011; Dayal, 2011; Bylinina and Podobryaev, 2020), I propose one novel test: compatibility of unmarked NPs with vague numeral *many*. This test is of special relevance because *many* is incompatible with singular NPs and requires that the extension of the noun that it modifies be closed under sum (i.e. cumulative reference, Cartwright 1975; Link 1983). Based on word order facts of DP-internal modifiers, I argue that Num hosting [±atomic] features is located between *n* and D, and below numerals (Ritter, 1991). It is the presence of NumP that enables modification by size adjectives. In addition, I argue that the inclusive/exclusive ambiguity is the result of syntactically conditioned allosemy at LF (Arad, 2003; Marantz, 2001, 2013; Harley, 2014; Wood, 2016, 2023). In particular, an indefinite determiner which is either an NPI or is inherently negative triggers an interpretation of [-atomic] which results in an inclusive plurality. Elsewhere, [-atomic] gives rise to exclusive plurals. The results of the analysis paired with cross-linguistic observations about number give rise to a novel generalization that correlates morphological markedness and semantic interpretation: unmarked forms must at least contain individual non-overlapping atoms; and plural-marked ones must contain sums of atoms.

2. Alasha Mongolian: Some background

Mongolian languages are spoken in various regions of Central and Northeast Asia. There is a fair amount of comprehensive descriptive studies (Poppe, 1955, 1970; Binnick, 1979, 2011; Janhunen, 2012) and also a growing body of formal morpho-syntactic and semantic literature (Guntsetseg, 2016; Fong, 2019; Bylinina and Podobryaev, 2020; Gong, 2021, 2022). With the exception of Lee (2023); Toquero-Pérez (2023), none of these works reports data from the Alashan variety, however.

Alasha Mongolian is a variety of Mongolian spoken in the Alxa League region located in west inner Mongolia.[4] The variety is in close proximity to Oirat, also spoken in west inner Mongolia (Janhunen, 2012). The total number of speakers is unknown, and only wikipedia reports that the number of Alasha Mongolian speakers is roughly 40,000.[5]

Like other languges in the Altaic family (Turkish, Sakha, Buriat a.o.), Alasha Mongolian is head final: the canonical order is SOV (8a), it has postpositions (8b) and adjectives precede the noun they modify (8c).[6] Moreover, it has a rich case system whose exponents are spelled-out in the noun. Among the relevant cases, Alasha Mongolian distinguishes ACC(usative), DAT(itve),

[4] The data collection took place during the spring of 2022 as part of a field methods class in Los Angeles, California. In addition to the general class (20 1.5h sessions), there were a total of 8 1h individual sessions. Additional elicitation sessions took place during the fall of 2023. The data were elicited from a single speaker.

[5] https://en.wikipedia.org/wiki/Alasha_dialect.

[6] Throughout the paper I will ignore IPA and phonetic transcription. I use the following orthographic conventions that map onto the corresponding IPA symbols. The conventions for vowels are the following: *a* = [ɑ]; *ö* = [ø]; *ü* = [ʏ]; *u* = [o/u]; *o* = [ɔ]; *V* = [ə] or highly reduced unstressed vowels; small caps *v* is a placeholder for any vowel. Long vowels are represented with [:] after the vowel. The

GEN(itve), INSTR(umental), ABL(ative) and COMIT(ative). Nominative is typically covert, execept for certain pronouns, nominalized elements or the subject of relative clauses, (see also Janhunen, 2012; Gong, 2022, for the same observation in other Mongolian varieties).[7]

(8) a. bi BatVr xar-sVn
I Batar see-PST.PERF
'I saw Batar'

b. xol-ni tuxai
food-GEN about
'about food'

c. tam nom (* tam)
big book big
'big book'

3. Core data: unmarked NPs and PL-marked NPs

Count nouns in Alasha Mongolian make a morpho-syntactic distinction between an unmarked form and a 'plural' one, spelled-out as /*-v:d*/. The vowel in the plural morpheme is subject to vowel harmony conditioned by the noun root.[8] A sample of the data is given in Table 2, where 'Ø' represents the unmarked form as opposed to the marked one, i.e. PL.

Table 2. Unmarked and PL-marked bare nouns in Alasha Mongolian

inanimate	a. **Ø**	**PL**	b. **Ø**	**PL**
	nom	nom-o:d	almort	almort-o:d
	book	book-PL	apple	apple-PL
	'book(s)'	'books'	'apple(s)'	'apples'
animate	c. **Ø**	**PL**	d. **Ø**	**PL**
	mör	mör-ö:d	xü	xüch-üd
	horse	horse-PL	boy	boy-PL
	'horse'	'horses'	'boy'	'boys'

The first empirical observation that can be extracted from Table 2 is that there is an animacy split in the case of unmarked nouns: inanimates are number neutral whereas animates are strictly singular. In what follows, I first motivate this distinction for unmarked nouns, and then probe the properties of their plural-marked forms. After that, I show how each of these forms (unmarked and plural-marked) interact with DP-internal modifiers such as adjectives and numerals.

conventions for consonants are as follows: *ch* = [tʃ]; *j* = [dʒ]; *gh* = [ɢ]; *sh* = [ʃ]; *v* = [ʊ]; *x* = [x/χ/h]; *ng* = [ŋ]; *w* = [w].

[7] The aspect and tense system of Mongolian is complex and in some cases subject to massive syncretism (Binnick, 2011; Janhunen, 2012; Gong, 2022). The suffix *-sVn*, in particular, can be used as a perfective aspectual marker, but also as a finite past tense ending. In non-finite contexts, it acts as a perfect participle marker. From now on, I will be indicating in the glosses the relevant meaning: PST.PERF for finite contexts and PERF.PART for the non-finite ones.

[8] The surface forms of Alasha Mongolian inflectional and derivational suffixes are subject to vowel harmony. Given that the conditions of vowel harmony are not the goal of this paper and the selection of the particular vowel has no semantic effect, I treat all plural allomorphs as variants of the same underlying form /-v:d/.

3.1 Unmarked inanimate nouns

The number neutral interpretation of unmarked inanimate nouns is found in a wide variety of syntactic contexts. For example in (9a), *nom* 'book' is the complement of the transitive verb *onsix* 'to read' and the sentence is ambiguous between the speaker having read one or several books. The same is observed when the nominal expression is the complement of a preposition in (9b) or the subject of a copular construction in (9c):

(9) a. bi nom onsh-Vn
I book read-PST.PERF
SNG: 'I read a book'
PLR: 'I read books'

b. nom-in tuxai
book-GEN about
SNG: 'about a book'
PLR: 'about books'

c. nom bol unte
book COP expensive
SNG: 'A book is expensive'
PLR: 'Books are expensive'

Case marking on the relevant noun does not eliminate number-neutrality. This is observed in (9b) where *nom* is overtly marked genitive. (10a) and (10b) show further support for this observation: *almort* 'apple' bears instrumental case, and *nom* accusative case.

(10) a. bi xan-ig almort-**or** tijil-sVn
I goat-ACC apple-INSTR feed-PST.PERF
SNG: 'I fed the goat with an apple'
PLR: 'I fed the goat with apples'

b. bi nom-**ig** xotaltin ap-pa
I nom-ACC bought get-PST
SNG: 'I bought a book'
PLR: 'I bought books'

In addition to these contexts, number neutrality is maintained with overt possessive determiners and is not sensitive to person restrictions, as illustrated in (11), (in this respect Alasha Mongolian differs from Buriat, Bylinina and Podobryaev, 2020).[9]

(11) tir xü {mi-ni/ chi-ni/ tu-ni} tstsig(-ig) BatVr-t og-sVn
that boy 1SG-GEN/ 2SG-GEN/ 3SG-GEN flower(-ACC) Batar-DAT give-PST.PERF
SNG: 'That/the boy gave Batar {my/your/his/her} flower'
PLR: 'That/the boy gave Batar {my/your/his/her} flowers'

Unmarked inanimate nouns show the typical hallmarks of number neutral nouns cross-linguistically (Farkas and de Swart, 2003, 2010; Bale et al., 2011; Dayal, 2011; Bylinina and Podobryaev, 2020). For example, they serve as the antecedent of either a plural or a singular anaphoric pronoun as shown in (12).

(12) bi **nom**$_i$ xotaltin ap-pa
I book bought get-PST
'I bought {a book/ books}.

a. **in**$_i$ bol unte
3SG COP expensive
'It was expensive'

b. **tidgir**$_i$ bol unte
3PL COP expensive
'They were expensive'

In addition, the same NP *nom* is compatible with distribuitve adjuncts such as *nig nigir* 'one by one' in (13a). This is not a particular property of *nig nigir* as the same pattern is observed with other distributive markers such as *tsilgir dülün* 'each other' in (13b), and *adelbas nomin-sangas* 'from different libraries' in (13c).

[9] Alasha Mongolian lacks overt articles, but it has a demonstrative system: *tir* 'that' marks definitiness and can be used with the meaning of 'the'. Thus, the translation.

(13) a. BatVr nom(-ig) nig-nig-ir onsh-wa
Batar book-ACC one-one-INSTR read-PST
'Batar read {*a book/ books} one by one'

b. BatVr nom(-ig) teldur-t tsilgir-dülün tav-o:
Batar book-ACC shelf-DAT each other place-PST
'Batar put {*a book/ books} next to each other on the shelf'

c. *[Batar is writing his dissertation and needs many books to consult. He requested all the books he needed via interlibrary loan.]*

nom adelbas nom-in-sang-as ir-be
book different book-GEN-warehouse-ABL came-PST
'{$^{??}$ a book/ books} arrived from different libraries.'
Int.: Book-1 arrived from library-x, book-2 from library-y etc.

Apart from showing that unmarked inanimate nouns are number neutral, the data in this section have important consequences for analytic choices to be made. In particular, the data serve as convincing evidence against an analysis based on (pseudo-)incorporation (Massam, 2001; Dayal, 2004). In those languages where number neutrality is argued to be the result of this process (Hungarian, Farkas and de Swart 2003; Hindi, Dayal 2004; 2011; Turkish, Sağ 2022), only non-case marked nouns remain number neutral and the number neutral noun must be (lineraly) adjacent to the verb or selecting predicate. None of these diagnostics hold in Alasha Mongolian. We have seen that case-marked nouns can still be number neutral (e.g. (9b), (10)) and the nominal can be separated from the verb (e.g. (11) in which the possessive direct object *tsitsig(-ig)* 'flower(-ACC)' is separated from the verb by the indirect object *BatVrt* 'Batar-DAT').

Last but not least, as reported by Dayal (2011), pseudo-incorporated nouns are incompatible with telic predicates under a number neutral interpretation. Again, this does not hold for Alasha Mongolian either (and potentially Mongolic languages more generally, see Bylinina and Podobryaev 2020): inanimate nouns unmarked for number are compatible with a number neutral interpretation when the verbal predicate is telic. For example, in (14) the telicity is marked by the temporal adjunct *taun tsakt* 'five hour' and the restructuring verb *dosxix* 'to finish' (Dowty, 1979).

(14) *[Batar is an avid reader and has to read LGB, SPE and Barriers for an assignment.]*

batVr tau-n tsak-t nom-ig ons-ich dosx-wa
Batar five-ATTR hour-DAT book-ACC read-CONV finish-PST
'Batar finished reading the books in 5h'

3.2 Unmarked animate nouns

Unmarked animate NPs such as *xü* 'boy' or *mör* 'horse' receive a strict singular interpretation, as shown in (15).

(15) a. bi xü(d-ig) dilgur-t xar-sVn
I boy-ACC store-DAT see-PST.PERF
SNG: 'I saw a boy in the store'
#PLR: 'I saw boys in the store'

b. tir xü mi-ni tstsig(-ig) mör-t og-sVn
that boy 1SG-GEN flower(-ACC) horse-DAT give-PST.PERF
SNG: 'That/the boy gave a horse my flower(s)'
#PLR: 'That/the boy gave horses my flower(s)'

The univocal singular interpretation is maintained regardless of case-marking on the noun or syntactic position: in (15a) *xü* is the direct object and may be marked accusative, and in (15b) *mör* bearing dative case is the recipient argument.

Besides, the unmarked animate NP in (15a) cannot serve as the antecedent for a plural anaphoric pronoun as in (16). Likewise, the unmarked animate NP is incompatible with distributive adjuncts like *nig nigir* or *adelbas nomin-sangas*, as illustrated in (17).

(16) { tir/* tirgir}$_{xü}$ bol tam.
3SG/ 3PL COP big
'(I saw a boy at the store.) {He was/ *They were} big'

(17) a. * bi xü(d-ig) nig-nig-ir xar-sVn
I boy-ACC one-one-INSTR see-PST.PERF
Lit.: 'I saw a boy one by one'
Int.:'I saw boys one by one'

b. * xü adelbas nom-in-sang-as ir-be
boy different book-GEN-warehouse-ABL came-PST
Lit.: 'A boy arrived from different libraries.'
Int.: Batar arrived from library-x, Brian from library-y etc.

3.3 Plural-marked nouns

As shown in Table 2, in addition to the unmarked form, all count nouns in Alasha Mongolian can be inflected for plural number by adding the morpheme *-v:d*. In an UEC, a sentence like (18) can only signify that there are two or more apples that the speaker bought. That is, the presence of the *-v:d* morpheme on *almort* induces an exclusive plural interpretation. The same is found with overt plural-marked animate nouns.

(18) Plural-marked inanimate noun (*exclusive plural in UEC*)
bi almort-o:d(-ig) xotaltin ab-sVn
I apple-PL-ACC bought get-PST.PERF
'I bought (2 or more) apples'

(19) Plural-marked animate noun (*exclusive plural in UEC*)

a. bi xüch-ü:d(-ig) dilgur-t xar-sVn
I boy-PL-ACC store-DAT see-PST.PERF
'I saw (2 or more) boys in the store'

b. tir xü mi-ni tstsig(-ig) mör-ö:d-Vt og-sVn
that boy 1SG-GEN flower(-ACC) horse-PL-DAT give-PST.PERF
'That/the boy gave (2 or more) horses my flower(s)'

However, in DEC and questions, plural nouns are interpreted inclusively, i.e. they can refer to one or more. An example is shown in (20) for inanimates and in (21) for animates.

(20) Plural-marked inanimate noun (*inclusive plural in DEC*)

bi almort-o:d(-ig) xotaltin ab-sVn-ghue
I apple-PL-ACC bought get-PST.PERF-NEG
'I didn't buy (any) apples'

(21) Plural-marked animate noun (*inclusive plural in DEC*)

bi xüch-ü:d(-ig) dilgur-t xar-sVn-ghue
I boy-PL-ACC store-DAT see-PST.PERF-NEG
'I didn't see (any) boys in the store'

In (20) and (21), the negative marker *ghue* 'not' surfaces as a verbal suffix, linearly following tense/aspect morphemes. (20) is judged false if the speaker bought one apple; (21) is judged false if the speaker saw one boy at the store. The same pattern observed with negation is also replicated in polar questions. This is shown in (22) for inanimates and (23) for animates.

(22) A: chi almort-o:d idi-tVg-o?
you apple-PL eat-HAB-Q.POL
'Do you typically eat apples?'

B: time:, nig
yes one
'Yes, I (typically) eat one'

B': # ughue, nig
NEG one
'No, I (typically) eat one.'

(23) A: chi xüch-üd dilgur-t xar-tVg-o?
you boy-PL store-DAT see-HAB-Q.POL
'Do you typically see boys at the store?'

B: time:, nig
yes one
'Yes, I (typically) see one'

B': # ughue, nig
NEG one
'No, I (typically) see one.'

In both (22) and (23), speaker A uses the plural-marked form of the noun in the question, and speaker B can answer felicitously by saying "yes, one". It is infelicitous for B to provide a negative answer.

3.4 The effect of (non-)classificatory adjectives

Despite the fact that the number neutral interpretation of unmarked inanimate NPs seems to have no restrictions based on the syntactic position of the NP, it is however unavailable in one very particular syntactic context: when the unmarked noun is modified by non-classificatory adjectives occurring in attributive (i.e. prenominal) position. These non-classificatory adjectives are also gradable and include *old, big, expensive, heavy* etc.. Modification by this class of attributive adjectives forces the unmarked inanimate noun to denote a singularity.

This class, when used attributively, contrasts with what Alexiadou et al. (2007) call "classificatory" adjectives, such as *Mongolian, European, scientific* or *religious*. These classificatory adjectives are in turn non-gradable, and do not block number neutrality.[10] (25) and (26) illustrate the contrast between the two classes of adjectives.[11]

(25) a. bi { tam/ xunde-n/ unte-n} nom onsh-Vn
I big heavy-ATTR expensive-ATTR book read-PST.PERF
SNG: 'I read a {big/ heavy/ expensive} book'
#PLR: 'I read {big/ heavy/ expensive} books'

b. bi { monghol/ shashin-tei/ iuvrop} nom onsh-Vn
I mongolian religion-ADJ european book read-PST.PERF
SNG: 'I read a {Mongolian/ religious/ European} book'
PLR: 'I read {Mongolian/ religious/ European} books'

(26) a. bi xan-ig { xunde-n/ unte-n} almort-or tijil-sVn
I goat-ACC heavy-ATTR expensive-ATTR apple-INSTR feed-PST.PERF
SNG: 'I fed the goat with a {heavy/ expensive} apple'
#PLR: 'I fed the goat with {heavy/ expensive} apples'

b. bi xan-ig { monghol/ iuvrop} almort-or tijil-sVn
I goat-ACC Mongolian European apple-INSTR feed-PST.PERF
SNG: 'I fed the goat with a {Mongolian/ European} apple'
PLR: 'I fed the goat with {Mongolian/ European} apples'

Attributive non-classificatory APs have a trivial impact on unmarked animate NPs: they are still strictly singular as (27) shows.

(27) bi { tam/ xunde-n} xü(d-ig) dilgur-t xar-sVn
I big heavy boy-ACC store-DAT see-PST
SNG: 'I saw a {big/ heavy} boy in the store'
#PLR: 'I saw {big/ heavy} boys in the store'

Importantly, overt plural marking on the noun can co-occur with non-classificatory AP modifiers. In that case, the plural morpheme has the expected effect in both upward and downward entailing contexts: in the former it is interpreted exclusively, while in the latter it is interpreted inclusively. This is shown in (28) for inanimates and (29) for animates.

[10] While the adjectives in (25a) and (26a) are compatible with degree modifier *mash* 'very', the adjectives in (25b) and (26b) are marked at best, e.g. (24). This is as might be expected if the latter can be coerced into a gradable property but such coercion is marked.

(24) a. mash { tam/ xunde/ unte}
very big heavy expensive
'very {big/ heavy/ expensive}

b. ?? mash { monghol/ shashin-tei/ iuvrop}
very Mongolian religion-ADJ European
'very {Mongolian/ religious/ European}

[11] Similar observations between the two classes of AP have been reported for Turkish (Sağ, 2022) and Western Armenian (Kalomoiros, 2021).

(28) a. bi { tam/ xunde-n/ unte-n} nom-o:d onsh-Vn
I big heavy-ATTR expensive-ATTR book-PL read-PST.PERF
'I read (2 or more) {big/ heavy/ expensive} books' (*exclusive plural*)

b. bi { tam/ xunde-n/ unte-n} nom-o:d onsh-Vn-ghue
I big heavy-ATTR expensive-ATTR book-PL read-PST.PERF-NEG
'I didn't read (any) {big/ heavy/ expensive} books' (*inclusive plural*)

(29) a. bi { tam/ xunde-n} xüch-üd(-ig) dilgur-t xar-sVn
I big heavy-ATTR boy-PL-ACC store-DAT see-PST.PERF
'I saw (2 or more) {big/ heavy} boys in the store' (*exclusive plural*)

b. bi { tam/ xunde-n} xüch-üd(-ig) dilgur-t xar-sVn-ghue
I big heavy-ATTR boy-PL-ACC store-DAT see-PST.PERF-NEG
'I didn't see (any) {big/ heavy} boys in the store' (*inclusive plural*)

Classificatory APs are also compatible with overt plural marking on the noun they modify. An example is in (30). Once again, the plural is exclusive or inclusive depending on the upward or downward entailingness of the sentence.

(30) a. shashin-tei nom-o:d
religion-ADJ book-PL
'Religious books'

b. shashin-tei xüch-üd
religion-ADJ boy-PL
'Religious boys'

In addition to gradability and their interaction with number, the two classes of adjectives differ in three respects: (i) the presence of the attributive morpheme /-*n*/; (ii) NP-internal word order; and (iii) (in)compatibility with mass nouns. I discuss each of these aspects in turn below.

Prenominal non-classificatory adjectives bear a morpheme /-*n*/, which is labelled in the descriptive grammars as attributive (ATTR) marking, (Janhunen, 2012, ch.6). This attributive marker does not surface on prenominal classificatory APs. Furthermore, it is ungrammatical when it surfaces on both classes of APs when used predicatively. The difference in attributive marking between the two classes of AP is illustrated in (31) and (32).

(31) Attributive marking with non-classificatory APs

a. bi unte*(**-n**) nom onsh-Vn
I expensive-ATTR book read-PST
SNG: 'I read a expensive book'
#PLR: 'I read expensive books'

b. nom bol unte(*-**n**)
book COP expensive-ATTR
SNG: 'A book is expensive'
PLR: 'Books are expensive'

(32) Attributive marking with classificatory APs

a. bi shashin-tei(*-**n**) nom onsh-Vn
I religion-ADJ-ATTR book read-PST
SNG: 'I read a religious book'
PLR: 'I read religious books'

b. nom bol shashin-tei(*-**n**)
book COP religion-ADJ-ATTR
SNG: 'A book is religious'
PLR: 'Books are religious'

If the modifier does not end in a vowel, the attributive morpheme is covert. For example, this is shown in (8c) and (25a) for the adjective *tam*: 'big'. In addition, the lack of ATTR-marking on

adjectives like *shashintei* 'religious' is not conditioned by the adjectivizing head *-tei*. Complex gradable adjectives like *fast* are built from a root *xortots* 'speed' plus the adjectizer *-tei* and yet they are compatible with ATTR-marking: (33).

(33) xortots-tei-**n** mashin
speed-ADJ-ATTR car
'fast car'

With respect to NP-internal word order, the two classes of adjectives can co-occur in the same NP. When that happens, non-classificatory APs must surface to the left of classificatory APs. This is a common pattern across languages (Cinque, 2005, 2010; Alexiadou et al., 2007; Svenonius, 2008). The opposite order is ungrammatical, as seen in (34).

(34) 'expensive religious book' $AP_{non\text{-}Class} > AP_{Class} > N$

a. unte-n shashin-tei nom b. * shashin-tei unte-n nom
expensive-ATTR religion-ADJ book religion-ADJ expensive-ATTR book

Last but not least, non-classificatory APs are only compatible with count nouns, and are unacceptable with mass nouns. This is shown in (35). Classificatory APs can modify mass nouns, in contrast, as shown in (36).

(35) * { tam/ xunde-n/ unte-n} { tsos/ os}
big heavy-ATTR expensive-ATTR blood water
Int.: '{Large/ heavy/ expensive} {blood/ water}'

(36) { monghol/ iuvrop} { tsos/ os}
Mongolian European blood water

This distribution of non-classificatory APs is reminiscent of Schwarzschild's (2011) observation for stubbornly distributive adjectives (e.g. **large/heavy water*).[12] [13] Thus, we can conclude that while non-classificatory APs (or at least the ones presented here and elicitied so far) require the noun to be count and singular/plural, classificatory ones do not.

3.5 Numerals

Alasha Mongolian has precise numerals. When used enumeratively, i.e. in a list, they are uninflected as in (39).

[12] Schwarzschild (2011) builds on the observations from Quine (1960); McCawley (1979); Chierchia (1998b); Gillon (1999) and others to establish his generalization.

[13] In English at least, it is possible to modify mass nouns like *water, tea* as in (37). It is unclear whether *water/tea* in such examples have a 'canonical mass' interpretation or count one (e.g. *expensive containers/types of water*). It is also possible to say things like (38) where *heavy* is modifying a mass noun. However, *heavy* does not seem to introduce a dimension of weight/volume but rather 'strength/abundance'.

(37) They drink expensive {water/ tea} at home.

(38) Heavy perfume

(39) nigV(*-n), xoirV(*-n), ghorovV(*-n), duruvV(*-n), tau(*-n)…
one-ATTR two-ATTR three-ATTR four-ATTR five-ATTR
'one, two, three, four, five… (*List*)

When they modify a noun, they are prenominal and must be inflected for attributive morphology, i.e. /*-n*/. If used predicatively, no attributive marker is spelled out on the numeral. The difference between attributive and predicative uses of numerals is illustrated in (40a) and (40b).

(40) a. { nigV-n/ ghorovV-n/ dulu-n} almort
one-ATTR three-ATTR seven-ATTR apple
'{one/ three/ seven} apples' (*Attributive*)

b. almort bol { ghorovV(*-n)/ dulu(*-n) }
apple COP three-ATTR seven-ATTR
'The apples are {three/ seven} (*Predicative*)

When numerals and non-classificatory APs co-occur, numerals must precede the AP. In other words, the order is always as in (41a), and never as in (41b). In addition, the ATTR morpheme must surface on both the numeral and the non-classificatory AP. If the ATTR morpheme is absent on either modifier, the sentence is unacceptable as in (42).

(41) Numeral > $AP_{non\text{-}class}$ > N

a. duruvV-n xunde-n nom
four-ATTR heavy-ATTR book

b. * xunde-n duruvV-n nom
heavy-ATTR four-ATTR book
'Four heavy books'

(42) No ATTR-marking

a. * duruvV xunde-n nom
four heavy-ATTR book

b. * duruvV-n xunde nom
four-ATTR heavy book

In addition to the attributive marker, numerals and non-classificatory adjectives have in common the fact that they cannot directly modify mass nouns. The examples in (43) are ungrammatical even under packaging/container or sorting/kind contexts (Bunt, 1985; Bach, 1986).[14]

(43) a. * bi duruvV-n os ob-sVn
I 4-ATTR water drink-PST.PERF
'I drank 4 waters' (#container, #kind)

b. * bi duruvV-n adelbas os abchir-gwa
I 4-ATTR different water bring-PST
'I brought 4 different waters' (#container, #kind)

[14] The container interpretation can only be obtained with a pseudo-partitive structure. See Toquero-Pérez (2023) for details.

With respect to the interaction of numerals and number marking on the noun, we observe that the numerically modified noun must be unmarked, and cannot be inflected for plural. This is shown in (44) for inanimates and in (45) for animates.

(44) a. { nigV-n/ one-ATTR ghorovV-n/} three-ATTR almort apple

b. * { nigV-n/ one-ATTR ghorovV-n/} three-ATTR almort-o:d apple-PL
'{one/ three} apples'

(45) a. { nigV-n/ one-ATTR ghorovV-n/} three-ATTR xü: boy

b. * { nigV-n/ one-ATTR ghorovV-n/} three-ATTR xü:ch-ü:d boy-PL
'{one/ three} boys'

The compatibility of numerals with unmarked animate nouns, which are strictly singular, and their incompatibility with the overt plural morpheme, which makes reference to pluralities, suggests that the noun in combination with numerals must be semantically singular rather than number neutral (Krifka, 1989, 1995; Ionin and Matushansky, 2006, 2018; Pancheva, 2022, 2023; Sağ, 2022).

4. A novel diagnostic: *many* and unmarked NPs

4.1 Some background

In addition to precise cardinal numerals, many languages also have vague numerals (sometimes known as quantity adjectives, e.g. *much/many/little/few* etc.). These vague numerals are restricted in their distribution. For example, some are only compatible with unmarked mass NPs while others are only compatible with plural -marked (count) NPs. English is an example of such a language: *much* + $NP_{[MASS]}$, *many* + $NP_{[PL]}$ (Bresnan, 1973; Hackl, 2000; Schwarzschild, 2006; Bale and Barner, 2009; Wellwood et al., 2012). However, singular count NPs are unacceptable with either. The same restrictions are observed with their negative counterparts *little* and *few*. Depending on whether the noun is countable or non-countable, the vague numeral will induce a cardinality or non-cardinality (e.g. volume, weight) interpretation. These differences are illustrated in (46) and (47) for English.

(46) a. much coffee (VOLUME/WEIGHT, #CARDINALITY)

b. many coffees (#VOLUME/WEIGHT, CARDINALITY)

(47) a. * {much/ many} student

b. many students (#VOLUME/WEIGHT, CARDINALITY)

The formal explanation for this restriction, i.e. the fact that singular count NPs are unacceptable with either *many* or *much*, is found in the structure of the extension of the relevant NP. Mass and plural count nouns have cumulative extensions that have a part-whole structure; singular count nouns, on the contrary, lack extensions with such part-whole relations among their elements (Cartwright, 1975; Link, 1983; Krifka, 1989, 1997; Chierchia, 1998a, 2010, a.o.). Under the assumption that vague numerals introduce measure functions whose dimension for measurement must be structure-preserving (Krifka, 1989; Schwarzschild, 2006; Bale and Barner, 2009; Wellwood et al., 2012), vague numerals like *much/many* can combine with mass and plural count nouns because they are both closed under-sum. Singular count NPs denote sets of atoms and do not have sums in their extension. Thus, they do not satisfy the cumulativity requirement.

Alasha Mongolian has vague numerals which are also sensitive to the mass-count distinction. Similar to English, *ix* 'much' is only compatible with mass nouns and *olin* 'many' is acceptable with plural count nouns. This is shown in (49) and (50).[15]

(49) a. ix { os/ tsos}
much water blood
'much {water/ blood}' (VOLUME/WEIGHT, #CARDINALITY)

b. * ix xü(ch-ü:d)
much boy-PL
'much {boy/ boy}

(50) a. * olin { os/ tsos}
many water blood
'many {water/ blood}'

b. olin xüch-ü:d
many boy-PL
'many boys' (#VOLUME/WEIGHT, CARDINALITY)

Like in English, when a substance mass noun like *water/blood* is being modified by the vague numeral, the interpretation is in terms of volume or weight, but not cardinality, e.g. (49). This is an indication that the noun is non-countable. On the contrary, plural count nouns modified by the vague numeral show the opposite interpretive pattern, i.e. only cardinality is available, and are therefore countable: (50).

Focusing only on count nouns, we can use the distribution and interpretation of *olin* to determine whether an unmarked noun in Alasha Mongolian denotes a plurality or a singularity. In particular, we predict that if nouns unmarked for number are really number neutral and their denotation is as in (51), such NP must be compatible with $olin$; however, if they are not number neutral, but strictly singular, they will be incompatible with $olin$. These predictions are schematically represented in (52):

(51) $[\![\text{NP}]\!] = \{a,\ b,\ c,\ ab,\ ac,\ bc,\ abc\}$ Number neutral NP

(52) **Predictions of the *many*-test for number neutrality**

a. If an unmarked count NP is number neutral, it must be acceptable with vague numerals.

b. If an unmarked count NP is NOT number neutral, but strictly singular, it cannot be acceptable with vague numerals.

c. If an unmarked count NP can be modified by vague numerals, it will be countable (i.e. its interpretation will be along a cardinality scale).

[15] I will not be discussing the count-mass distinction in Alasha Mongolian. For the purposes of this paper, we can simply establish that the language makes the distinction overtly. For example, we have seen that mass nouns cannot be modified by stubbornly distributive adjectives (35), and be directly modified by numerals as in (43). They cannot be pluralized either (48).

(48) os – *os-o:d || tsos – *tsos-o:d
water water-PL || blood blood-PL

The predictions in (52) are consistent with the English data, for example: unmarked NPs are not number neutral, but strictly singular. Thus, a noun like *student* or *toy* is unacceptable with *many*. I now show that the predictions in (52) are also borne out in Alasha Mongolian.

4.2 Applying the *many*-test to Alasha Mongolian

As shown in (53a), inanimate countNPs like *almort*, *jürj* 'orange' or *nom* can be modified by *olin* when they are unmarked for number. The interpretation of said *n*P must be in terms of cardinality: (53a) means "the cardinality of apples/oranges/books exceeds a contextually determined standard". *ix* is incompatible with these count nouns, as shown in (53b).

(53) Vague numeral + unmarked inanimate NP

a. olin { almort/ jürj/ nom}
many apple orange book
'many {apples/ oranges/ books}' (#VOLUME/WEIGHT, CARDINALITY)

b. * ix nom
much book
'much book'

It is crucial to note that, as shown in (54), adding a non-classificatory adjective to the nominal expression makes vague numeral modification unacceptable.

(54) * olin tam { almort/ jürj/ nom}
many big apple orange book
'many/much big {apple/ orange/ book}'

This datum in (54) also contrasts with (41a) where the unmarked noun is modified by a cardinal numeral. What is more, it is consistent with the observation that unmarked inanimate nouns modified by adjectives and cardinal numerals are strictly singular, rather than number neutral.

Olin is acceptable with inanimate NPs that are overtly marked for plural. The acceptability with plural-marked inanimates extends to cases in which the nominal expression is modified by a non-classificatory adjective as well. The full paradigm is in (55).

(55) *olin* + plural-marked inanimate NP

a. olin nom-o:d
many book-PL
'many books' (#VOLUME/WEIGHT, CARDINALITY)

b. olin almort-o:d
many apple-PL
'many apples' (#VOLUME/WEIGHT, CARDINALITY)

c. olin tam { almort/ nom} -o:d
many big apple/ book -PL
'many big {apples/ books}' (#VOLUME/WEIGHT, CARDINALITY)

While plural-marking is optional for inanimate NPs when modified by *olin*, that is not the case for animate ones as illustrated in (56): in fact, if the NP is animate, plural-marking on the noun is required. Crucially, unmarked animate NPs are unacceptable with *olin*.

(56) *olin* + animate NP

a. olin xüch-ü:d
many child-PL
'many children' (#VOLUME/WEIGHT, CARDINALITY)

b. * olin xü
many child
'many child'

The data confirm the predictions outlined in (52): unmarked inanimates are grammatical with vague numerals such as *olin* and must be number neutral and countable. Unmarked animates are ungrammatical with *olin* and must therefore be strictly singular. The fact that adjectivally modified unmarked inanimates behave like unmarked animates indicates that these too are strictly singular.

5. Taking stock and generalizations

Up until this point, I have described the distribution of animate and inanimate NPs that are both unmarked for number and that are plural-marked in a variety of contexts. The data are summarized in Table 3 for unmarked NPs and in Table 4 for plural-marked ones. As before, the labels SNG/PLR refer to the semantic interpretation and not the phonological form of the noun: SNG = 'singularity' (e.g. 1); and PLR = 'plurality' (e.g. 2 or more). If a noun can refer to both, then we will say the noun is number neutral if unmarked or inclusively plural if plural-marked. The labels 'UEC' and 'DEC' in Table 4 stand for 'Upward Entailing Context' and 'Downward Entailing Context' (including questions), respectively. The generalizations that emerge from looking at Table 3 and Table 4 are summarized in (57).

Table 3. Number interpretation of unmarked NPs in Alasha Mongolian

	NP-case		**Poss. NP**		**Anaphoric Ref.**		**Non-Class. AP**		**Class AP**	
	SNG	**PLR**	**SNG**	**PLR**	**SNG**	**PLR**	**SNG**	**PLR**	**SNG**	**PLR**
[-animate]	✓	✓	✓	✓	✓	✓	✓	*	✓	✓
[+animate]	✓	*	✓	*	✓	*	✓	*	✓	*

Table 4. Number interpretation of plural-marked NPs in Alasha Mongolian

		NP-case		**Non-Class. AP**		**Class AP**	
		SNG	**PLR**	**SNG**	**PLR**	**SNG**	**PLR**
UEC	[-animate]	*	✓	*	✓	*	✓
	[+animate]	*	✓	*	✓	*	✓
DEC	[-animate]	✓	✓	✓	✓	✓	✓
	[+animate]	✓	✓	✓	✓	✓	✓

(57) **Generalizations about the interpretation of number in Alasha Mongolian**

a. Inanimate unmarked NPs are always number neutral unless they are modified by non-classificatory adjectives in attributive position, in which case they are strictly singular.

b. Animate unmarked NPs are never number neutral, i.e. they are strictly singular.

c. In UEC, plural-marked NPs are always exclusively plural.

d. In DEC, plural-marked NPs are always inclusively plural.

The generalizations in (57) are similar to the ones reported by Bylinina and Podobryaev (2020) for Buriat in Table 1, with the exception of some micro-variation that I do not discuss here.[16] The generalizations indicate that Alasha Mongolian is also different from Western Armenian, as described by Bale et al. (2011); Bale and Khanjian (2014), in some important respects: (i) the animacy asymmetry; (ii) the strict singularity of unmarked nouns in some contexts; and (iii) the fact that plural-marked nouns are not always exclusive. In fact, Alasha Mongolian is similar to English in this last respect, given that the exclusive/inclusive distinction with plural-marked nouns is conditioned by the veridicality of the context (Krifka, 1989; Sauerland, 2003; Sauerland et al., 2005; Zweig, 2009).

In addition to these generalizations, we must address the case of numerals. Precise numerals were ungrammatical with overt plural-marked nouns, regardless of their animacy. However, they were grammatical with unmarked nouns, both animate and inanimate, modified by non-classificatory adjectives. These facts together with their acceptability with unmarked strictly singular animate nouns led to the conclusion that they require the noun to refer to a singularity. This is summarized in (58).

(58) Numerically modified NPs in Alasha Mongolian must be unmarked and refer to a singularity.

The generalization in (58) distinguishes Alasha Mongolian from languages like Western Armenian where numerals are compatible with plural-marked nouns and unmarked nouns that are number neutral (Bale et al., 2011; Bale and Khanjian, 2014). But it also makes Alasha Mongolian different from English where nouns modified by numerals higher than one are plural-marked.[17]

In addition to precise numerals, I surveyed the distribution of vague numerals with different types of count NPs. Given the generalizations in (57) that inanimate unmarked NPs are number neutral, but animate ones are strictly singular we expected only the former to be acceptable with *olin*. This is borne out, and is consistent with the predictions outlined in (52). In fact, it is in stark contrast with unmarked animate NPs which cannot combine with *olin* – also expected if they are strictly singular. What is more, the interpretation that arises when *olin* modifies a noun is a cardinality one which has been argued to be the result of the vague numeral having an atomic plurality in its immediate scope (Wellwood, 2018; Cleani and Toquero-Pérez, 2022).

[16] In Buriat ACC-marked nouns are strictly singular and so are 1^{st} and 2^{nd} person possessed ones. I should note that Bylinina and Podobryaev (2020) make no distinction with respect to the type of adjectival, cardinal and vague numeral modification. There is also no discussion of the presence of the attributive marker.

[17] In terms of the semantics, there is a debate as to whether numerals universally require the noun they modify to denote a singularity, despite morphological markedness (Krifka, 1989, 1995; Ionin and Matushansky, 2006, 2018; Alexiadou, 2019), or a plurality (Chierchia, 1998a, 2010; Bale et al., 2011; Scontras, 2013; Martí, 2020b, and others). I come back to this in §7.

If we compare numerically modified nouns in (44) and (45) to *olin*-modified nouns, as described in subsection 4.2, we observe that the two types of modifiers are in complementary distribution as summarized in the Table 5.

Table 5. Syntactic distribution of *olin* and precise numerals (with count nouns)

	[-animate]				**[+animate]**			
	unmarked (*nom*)		**PL-marked (*nom-o:d*)**		**unmarked (*xü*)**		**PL-marked (*xüch-ü:d*)**	
	no AP	**with AP**	**no AP**	**with AP**	**no AP**	**with AP**	**no AP**	**with AP**
olin 'many'	✓	*	✓	✓	*	*	✓	✓
numerals	✓	✓	*	*	✓	✓	*	*

According to Table 5 numerals can only modify unmarked nouns that are strictly singular, whereas vague numeral *olin* may modify inanimate unmarked nouns that occur without a non-classificatory adjective. Besides, *olin* can be found with plural-marked nouns regardless of their animacy and the presence/absence of a non-classificatory adjective. These observations corroborate the generalization in (58) and give rise to the inference in (59). In other words, we can conclude that while the animacy split for number neutrality is not maintained in precise numeral-noun constructions, it remains in vague numeral-noun constructions.

(59) *Olin*-modified nouns must be cumulative (e.g. either overtly plural-marked or inanimate number neutral) and countable.

6. Analysis

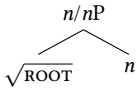
I propose that the generalizations formulated in the previous section as well as the distribution and interpretation of nominal number in Alasha Mongolian can follow directly from the syntactic representation of the DP, and its mapping to the morphological and semantic interfaces. In particular, I propose that while there is a head Num(ber) that hosts features that mark the noun for singular or plural and restrict the denotation of the noun to a singularity (i.e. atoms) or a plurality (i.e. sums of atoms) (Cowper, 2005; Harbour, 2007, 2011, 2014; Cowper and Hall, 2009, 2012), Num may be absent from the structure leaving the noun morphologically unmarked and semantically underdetermined for number (i.e. number neutral). Num is projected for inanimates only when there is morpho-syntactic evidence to do so: plural marking, non-classificatory APs, numerals. On the contrary, Num is always present when the noun is [+animate]. I show that this analysis of nominal number has welcome consequences for the analysis of numerals. The inclsuive/exclusive ambiguity of the plural is the result of structurally conditioned allosemy (Arad, 2003; Marantz, 2001, 2013; Harley, 2014; Wood, 2016, 2023).

6.1 Some assumptions

The framework I am assuming is a generative syntactic framework, as developed in Chomsky (1995, 2000, 2001, 2008) and subsequent work, in tandem with the Distributed Morphology (DM)

model (Halle and Marantz, 1993; Marantz, 1997; Harley and Noyer, 1998, 1999; Embick and Noyer, 2001; Embick, 2007, 2010, 2015; Embick and Marantz, 2008; Bobaljik, 2012). Under DM, terminal nodes merged and manipulated in the syntax are simply bundles of features, which may be interpretable or uninterpretable. In addition, "lexical categories" such as noun, verb, adjective etc. are decomposed into a category neutral terminal, i.e. $\sqrt{\text{ROOT}}$, and a category-defining terminal, i.e. the categorizing head such as *n, a, v*. These two terminals form a complex head whose label is determined by the choice of categorizer. This will be represented as in (60).

(60) Complex *n*-head: $\sqrt{\text{ROOT}}$ + categorizer *n*



One of the generalizations to be accounted for is the fact that inanimate unmarked NPs are number neutral, whereas their animate counterparts are strictly singular. Following Ritter (1993); Kramer (2015); Wiltschko and Ritter (2015), I liken animacy to gender and assume that animacy is encoded on the *n*-head by the binary feature [±animate].

After spell-out, at PF, the feature bundles on the terminals will be mapped to an exponent via the operation of Vocabulary Insertion (VI) instantiated by a series of rules. These rules are subject to competition as mediated by the Subset Principle (Kiparsky, 1973). I will follow the notation in (61), taken from Embick (2015), where α is the syntactic category of the terminal, [F] is the relevant feature (bundle) and X is the exponent followed by the context of application of the rule.

(61) VI rule format

α[F] $\Leftrightarrow$ $X / \_\_ \beta$ 'Map F on α to vocabulary item X in the context of β'

I assume that a similar mechanism is operative after spell-out at LF: the mapping from terminals to interpretation is mediated by Sense Insertion (SI) rules.[18] In particular, we can adopt the view that the denotation of terminal nodes (including both roots and functional heads), which have different 'flavours' or are polysemous, is determined post-syntactically via the syntactico-semantic context. This is known as allosemy (Arad, 2003; Marantz, 2001, 2013; Harley, 2014; Wood, 2016, 2023). These SI rules are the mapping analogue to the VI rule in (61) and are also subject to the Subset Principle. I schematically formalize these rules in (62) as established by Harley (2014); Wood (2016, 2023) and others.

(62) a. X $\leftrightarrow$ $\lambda\sigma \ldots / __$Y 'Interpret X as the λ-expression in the context of Y'

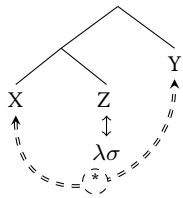
b. X $\leftrightarrow$ $\lambda\sigma.\lambda\tau \ldots$ 'Interpret X as the λ-expression elsewhere'

Whenever the contextual specification for X is met, the rule in (62a) will apply. Otherwise, X will be interpreted as the default or elsewhere case in (62b). In thinking about the domain of alloseme selection, I am assuming that it has to be strictly local just like the domain for allomorph selection (Embick, 2010, 2015; Bobaljik, 2012; Bobaljik and Harley, 2017): a node X cannot trigger allosemy on a node Y if there is an interpretable node Z that intervenes. In (63a), Z is a contentful intervener and Y cannot condition allosemy on X, whereas in (63b) Z is an identity function represented as 'Ø' making Y and X local thus triggering the application of the rule in (62b).

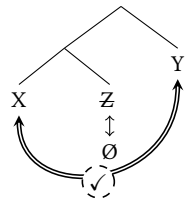
[18] I am borrowing the term 'Sense Insertion' from Schwarzschild (2023) to refer to this particular operation.

(63) Locality conditions for allosemy

a.



b.



In addition, I adopt Harbour's (2007; 2011; 2014) theory of number. Harbour's theory rests on several assumptions, but I only mention the ones that are relevant for this paper. (a) *n* categorizing the root structures it into semi-lattices (via Link's 1983 '*'-operator). The semantics for *n* is given in (65).

(64) $\sqrt{\text{ROOT}} = \lambda x.\text{root}(x)$

(65) $[\![n[\pm\text{animate}]]\!] = \lambda P_{\langle e,t\rangle}.\lambda x.{}^*P(x) \wedge (\neg)\text{animate}(x)$

$[\![*]\!] = \lambda P_{\langle e,t\rangle}.\lambda x.\exists Q[Q \subseteq P \wedge \sqcup Q = x]$

'$^*(P)$ is a property satisfied by all and only those individuals which are sums of some Ps.'

Assuming a simple model in which there are only three individuals {*a, b, c*}, what *n* does to the root is impose the semi-lattice structure in Figure 1: a predicate that has individuals (atoms) and sums of those individuals. In other words, *n*P has a number neutral interpretation.[19]

(b) In the spirit of Ritter (1991); Cowper (2005) a functional head called Num(ber), above *n*P, hosts number features. According to Harbour, for those languages that make a singular-plural

[19] One might wonder where the noun is getting the atomic reference from. While this is not crucial for the paper, here are two possibilities that can be adopted. We can assume that roots themselves are lexically specified for atomic or anti-atomic structure, e.g. Bunt (1979); Krifka (1989); Gillon (1992); Chierchia (1998a,b).

(66) a. $[\![\sqrt{\text{ROOT}}_{atomic}]\!] = \{x\text{: } x \text{ is an atomic root-thing}\}$

b. $[\![\sqrt{\text{ROOT}}_{anti-atomic}]\!] = \{x\text{: } x \text{ is a portion of root-stuff}\}$

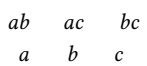
Alternatively, and more in line with the general framework that I am adopting, we can assume that the root is just an index that is compatible with a series of possible exponents and meanings, the selection of the which is determined by the categorizing head that the root composes with, i.e. via allomorphy at PF and allosemy at LF. In this case at hand, we could assume that the atomic denotation of the root is selected when the categorizer is [±animate] whereas if it is underspecified for animacy, the anti-atomic meaning will be selected. This proposal entails that the locus of countability in the language is markedness for animacy. This is schematized in (67). That is, what goes into the interpretation function, in the sense of Heim and Kratzer (1998), is the possible meaning selected by the allosemy rule, which we can represent using the model-theoretic denotations in (66). For details, see Toquero-Pérez (2024).

(67) a. $\sqrt{\text{ROOT}}$={ROOT$_{atomic}$; ROOT$_{anti-atomic}$}

b. $\sqrt{\text{ROOT}} \leftrightarrow \text{ROOT}_{atomic}/\_\_n[\pm\text{animate}]$

c. $\sqrt{\text{ROOT}} \leftrightarrow \text{ROOT}_{anti-atomic}/\_\_n$

Fig. 1: Extension of *n*P



distinction (for count nouns) only the feature [±atomic] is available on Num. (c) These features operate on the semi-lattice structure given by the *n*P and restrict the denotation of the noun. Harbour's features are given in (68), with the definitions modified as in Martí (2020b,a).

(68) a. $[\![\text{[+atomic]}]\!] = \lambda P.\lambda x.P(x) \wedge \text{atom}(x)$
$\text{atom}(x) = \neg\exists y[y \sqsubset x]$
b. $[\![\text{[-atomic]}]\!] = \lambda P.\lambda x.P(x) \wedge \neg\text{atom}(x)$

In a nutshell, we can say that [+atomic] = singularities (i.e. the bottom row of the semilattice in Figure 1), and [-atomic] = non-singularities or pluralities (i.e. everything but the bottom row of the semilattice in Figure 1). This is summarized in (69).

(69) a. $[\![n\text{P}]\!] = [\![n]\!]([\![\sqrt{\text{ROOT}}]\!]) = {}^*\text{root}(x) \wedge (\neg)\text{animate}(x)$ {*a, b, c, ab, ac, bc, abc*}
b. $[\![\text{[+atomic] } n\text{P}]\!] = [\![\text{[+atomic]}]\!]([\![(69a)]\!]) = {}^*\text{root}(x) \wedge (\neg)\text{animate}(x) \wedge \text{atom}(x)$ {*a, b, c*}
c. $[\![\text{[−atomic] } n\text{P}]\!] = [\![\text{[-atomic]}]\!]([\![(69a)]\!]) = {}^*\text{root}(x) \wedge (\neg)\text{animate}(x) \wedge \neg\text{atom}(x)$ {*ab, ac, bc, abc*}

6.2 The basic syntactic structure of (count) nouns

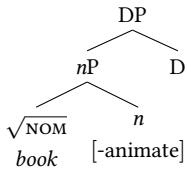
Given the theory of number adopted, projecting NumP entails that the noun will be strictly singular if unmarked or (exlcusively) plural if plural-marked. This leaves no room for unmarked nouns which are number neutral. However, there is a solution within this system, which I adopt here: unmarked nouns which are number neutral are syntactically impoverished and do not project NumP. If [±atomic] is absent from the numeration and thus not represented in the syntax, NumP will not be projected;[20] as a result, the noun will remain unmarked for number and no number feature will restrict the interpretation of the *n*P (to either atoms or their sums). The hypothesis that unmarked number neutral nouns do not project NumP receives cross-linguistic support from Amharic (Kramer, 2017), Bayso and Fouta Jalon Fula (Corbett, 2000; Harbour, 2014; Martí, 2020a), and Haitian Creole (Déprez, 2005) to name a few. That said, I propose that the structure of unmarked number neutral nouns in Alasha Mongolian is as given in (70a).[21] This structure differs from the one that unmarked animate nouns have, given in (70b).

[20] This follows from the theory of Bare Phrase Structure (Chomsky, 1994, 1995) and the framework of Distributed Morphology (Halle and Marantz, 1993): syntactic categories are taken to represent the features that compose them.

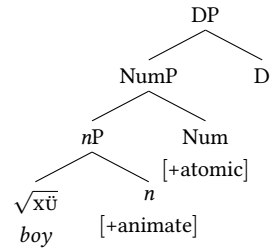
[21] I follow von Heusinger and Kornflit's (2017) analysis of Altaic nominals and assume that, despite lacking an overt articles, Alasha Mongolian has DPs.

(70) The syntax of (unmodified) unmarked nouns

a. Inanimates = number neutral



b. Animates = singular

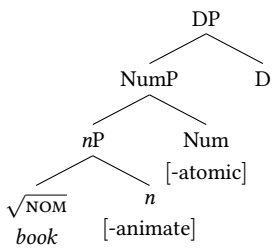


The two structures for unmarked nouns differ in two main respects: (i) animacy class features on *n*, and (ii) the absence or presence of Num. Inanimate nouns are [-animate] and lack Num; animate nouns are [+animate] and project NumP by virtue of being specifed as [+atomic].

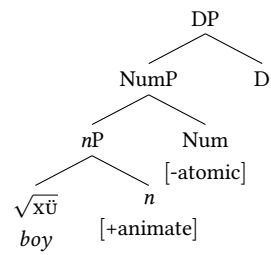
This does not mean, however, that inanimate nouns will never project NumP. In fact, these nouns can be overtly pluralized by *-v:d*, just like their animate counterparts. We can take this as evidence that whenever the noun is overtly plural, [-atomic] must be part of the syntactic derivation and NumP must be projected. Plural-marked nouns, therefore, have the structures in (71a) if inanimate, and in (71b) if animate.

(71) The syntax of Plural-marked nouns

a. Inanimates



b. Animates



This has consequences for both PF and LF. When transferred to the PF interface, the terminals are assigned a vocabulary item via the VI rules in (72) for *n* and (73) for Num.

(72) VI rules for *n*

a. *n*[+animate] ⇔ Ø

b. *n*[-animate] ⇔ Ø

(73) VI rules for Num

a. Num[+atomic] ⇔ Ø

b. Num[-atomic] ⇔ *-v:d*

As the rules predict, there is no overt exponent for the features on *n* in the language. Likewise, [+atomic] on Num is not mapped to an overt exponent either. Only [-atomic] has an overt exponent.

In terms of the semantic composition, the syntactic structures also give rise to the desired interpretations. (Unmodified) unmarked inanimate nouns are number neutral (i.e. they denote

atoms and their sums), whereas their animate counterparts are strictly singular (i.e. they only have atoms in their extension). This is shown in (74).

(74) a. $[\![(70a)]\!] = [\![\text{nom}]\!] = \lambda x.{}^*\text{book}(x) \wedge \neg\text{animate}(x)$ (e.g. {*a, b, c, ab, ac, bc, abc*})
'The property of being a book or books'

b. $[\![(70b)]\!] = [\![\text{[+atomic] xü}]\!] = \lambda x.{}^*\text{boy}(x) \wedge \text{animate}(x) \wedge \text{atom}(x)$ (e.g. {a, b, c})
'The property of being a boy'

In addition, restricting ourselves to the interpretation of the plural in UEC, the interpretation for both types of nouns, regardless of their animacy features, is an exclusive plurality. This is illustrated with the derivations in (75).

(75) a. $[\![(71a)]\!] = [\![\text{[-atomic] nom}]\!] = \lambda x.{}^*\text{book}(x) \wedge \neg\text{animate}(x) \wedge \neg\text{atom}(x)$
(e.g. {*ab, ac, bc, abc*})
'The property of being a non-atomic plurality of books'

b. $[\![(71b)]\!] = [\![\text{[-atomic] xü}]\!] = \lambda x.{}^*\text{boy}(x) \wedge \text{animate}(x) \wedge \neg\text{atom}(x)$ (e.g. {*ab, ac, bc, abc*})
'The property of being a non-atomic plurality of boys'

6.3 Deriving the exclusive/inclusive ambiguity with plural-marked nouns

An immediate consequence of the theory of number adopted is that plural-marked nouns, being [-atomic], will be forced to be interpreted always exclusively. While this is certainly a welcome result in the case of plural-marked nouns in UEC, it makes the wrong prediction when it comes to plural-marked nouns in DEC: they are interpreted inclusively.

One possibility, briefly entertained by Harbour (2014) described in more detail by Martí (2020a, p.59) and endorsed by Mathieu and Dali (2021, p.57), would be to hypothesize that plural-marked nouns are structurally ambiguous between projecting NumP or not. The difference between exclusive and inclusive plural-marked nouns would be along the same lines as the difference between unmodified unmarked inanimates and their animate counterparts that I have proposed here. If [-atomic] is not present in the derivation, the number neutral denotation of the *n*P will be passed along the DP.

However, this solution makes inaccurate morpho-syntactic predictions. In those languages, Alasha Mongolian being one of them, where we observe the exclusive-inclusive ambiguity in the plural, there is no difference in the exponence of the plural morpheme. That is, the same vocabulary item that spells out the [-atomic] feature is used, regardless of the interpretation. This is unexpected under this type of structural ambiguity account: if [-atomic] is not part of the syntax, it will not be subsequently mapped to a vocabulary item at PF; and the rule in (73b) will not apply. What we can conclude from this is that whatever is responsible for the ambiguity need only have a semantic effect, leaving the VI rules in (73) intact.

A very popular solution in the literature derives the ambiguity based on Gricean competition in the pragmatic computation (Krifka, 1989; Sauerland, 2003; Sauerland et al., 2005; Spector, 2007; Zweig, 2009). However, among other issues, Martí (2020a) has recently argued that these approaches would fail to capture Harbour's robust typology of number systems.[22] Martí

[22] Mathieu and Dali (2021, p.14) write that an issue for implicature-based approaches is that "multiplicity inferences are harder to suspend than regular scalar implicatures". They give the pair of examples in (76) to show this:

advocates instead for an account that derives the ambiguity based on the syntactic structure of the DP and its consequences for LF. In this paper, I will adhere to the spirit of the claims made by Martí (2020a); I propose an alternative solution to the ambiguity that is rooted in the architecture of the DP and that does not rely on implicature calculation.[23] In particular, I propose that the feature [-atomic] has two allosemes: an elsewhere alloseme, which is Harbour's denotation in (68b), and a marked alloseme that arises whenever [-atomic] occurs in the local context of a negative or NPI indefinite determiner. In what follows, I provide some motivation for this observation; then,I finally show how we can use it to derive the ambiguity at hand.

6.3.1 Inclusive plurals and covert *any*.

It has been observed, first by Harbour (2016, ch.6: p.149-150) and shortly after by Ackema and Neeleman (2018, ch.3: p.81-83), that plural-marked NPs interpreted inclusively in DECs are in parallel distribution to plural-marked NPs with NPI *any*. For example, the negative English sentences in (77) are truth-conditionally equivalent. Compare these to (78): overt *any* in (78b) makes the sentence odd.

(77) a. I didn't see children.
b. I didn't see **any** children.
'There is not even a child that I saw'

(78) a. I saw children.
b. ?? I saw **any** children.
'There is more than one child that I saw'

The patterns observed for *any* and plural-marked nouns in English are also found in Alasha Mongolian. An indefinite determiner *yamarch* 'any' is only found in DECs, as the contrast in (79) shows. (80), which parallels (23), illustrates that *yamarch* can also be found in questions.

(79) a. * bi yamarch { nom-o:d/ xüch-üd} xar-sVn
I any book-PL/ boy-PL see-PST.PERF
Lit. 'I saw any {books/ boys}'
b. bi yamarch { nom-o:d/ xüch-üd} xar-sVn-ghue
I any book-PL/ boy-PL see-PST.PERF-NEG
'I didn't see any {books/ boys}'

(80) A: chi yamarch { nom-o:d/ xüch-üd} dilgur-t xar-tVg-o?
you any book-PL/ boy-PL store-DAT see-HAB-Q.POL
'Do you typically see any {books/ boys} at the store?'
B: time:, nig
yes one
'Yes, I (typically) see one'

---

(76) a. Some of the professors left. In fact, all of them did.
b. Mary bought books. # In fact, she bought exactly one.

[23] An approach that relies of competition in terms of structurally determined scalar alternatives may be in principle compatible with the data and the syntactic structures proposed here. That is the approach that Bylinina and Podobryaev (2020) pursue for Buriat. However, for Bylinina and Podobryaev, $[\![[\text{PL}]]\!] = [\![*]\!]$ whereas for me $[\![[\text{-atomic}]]\!] \neq [\![*]\!]$. Thus, one needs to factor this difference when determining the set of possible alternatives.

ughue, nig
NEG one
No, I (typically) see one.

While I did not find a true negative indefinite determiner in my elicitations of Alasha Mongolian, English has one: *no*. In fact, we must note this negative indefinite triggers an inclusive plural interpretation on the noun. See (81).

(81) a. No children were invited to the party.
b. John has no children with Mary.

From these observations, we can conclude the following. First, at least in Alasha Mongolian, and some contexts in English, there is a covert counterpart of *any* that occurs with bare plurals in downward entailing contexts. Whenever this (overt or covert) *any/yamarch* is appropriately licensed, it will be responsible for triggering the inclusive interpretation of the plural. Second, a negative indefinite determiner (e.g. English) that has a plural noun in its scope will also trigger the inclusive interpretation of the plural. Schematically, we can summarize the rule that triggers the inclusive interpretation of plural-marked nouns as in (84).[24]

(84) General rule for the interpretation of plural-marked nouns in downward entailing contexts

A plural-marked noun …

a. …is interpreted inclusively if it is c-commanded by a negative indefinite (English *no*) or a properly licensed NPI at LF.
b. Otherwise, it will be interpreted exclusively.
c. Structural description: {NEG/ NPI} > PL > n $\sqrt{\text{ROOT}}$

I will take the structural description of the rule in (84) to indicate an interaction between the negative element and the plural feature. In particular, when the structural description is met, the canonical or unmarked meaning of the plural will be blocked and a different meaning for the

[24] While the generalization seems to be empirically well-motivated for Alasha Mongolian and English, there are at least two places where the interpretation of (covert/overt) *any* and inclusive plurals seems to diverge. I want to thank Y. Sudo (p.c.) for these observations. (a) One such case is in the scope of *only*: since the scope of *only* is an NPI licensing context, we would expect a plural-marked NP to receive an inclusive interpretation, but that is arguably incorrect, e.g. (82) is wrongly predicted to not imply that 'John has multiple iPhones'.

(82) Only John has iPhones.

(b) In a similar vein, plurals in the scope of *every* are potentially problematic for the analysis (Farkas and de Swart, 2010). A sentence like (83) has a reading that does not entail that every applicant submitted multiple journal articles, but at least some applicants did. Since the scope of *every* is not an NPI licensing environment, we would expect an exclusive plural interpretation that should entail that every applicant submitted multiple journal articles.

(83) Every applicant submitted journal articles as part of their job application.

These are problematic if we aim to have a generalized allosemy account for the inclusive/exclusive ambiguity of the plural. At this point, however, there is little that I can say about them and I will thus leave them for future research.

plural will be inserted instead. I model this interaction in terms of allosemy (Arad, 2003; Marantz, 2001, 2013; Harley, 2014; Wood, 2016, 2023).

6.3.2 [+NEG/+NPI] as an allosemy trigger on [-atomic].

I propose that negative-words including NPIs and negative determiners are decomposed into two parts (Collins and Postal, 2014): a negative or NPI element and an indefinite element.[25] It should be explicitly remarked that it is crucial for the proposal here that NPIs are distinguished from non-NPI determiners by a syntactically visible feature (Guerzoni, 2006). I propose the following decomposition in (85) and (86).

(85) The features of NPI indefinite determiners

D[-def, +NPI]$\Leftrightarrow$ $any/yamarch$

(86) The features of negative indefinite determiners

D[-def, +neg]$\Leftrightarrow$ no

D is the category feature and [-def] indicates lack of definiteness .While the exact semantic content of the NPI feature in (85), though, is to be yet determined, we can take its contribution to be in the spirit of Guerzoni (2006): the feature must be licensed at LF against the relevant negative or downward entailing head. The denotations for the two terminals are as given in (87).[26]

(87) a. $[\![\text{D[-def, +NPI]}]\!] = \lambda P.\lambda Q.[\exists x(P(x) \wedge Q(x))]$

b. $[\![\text{D[-def, +neg]}]\!] = \lambda P.\lambda Q.\neg[\exists x(P(x) \wedge Q(x))]$ (Collins and Postal, 2014, ch3.: p.25)

In addition to this, I propose that [-atomic] has two allosemes. These are captured by the allosemy rules in (88).

(88) Allosemy rules for [-atomic]

a. Num[-atomic] $\leftrightarrow$ $\lambda P.P/\_\_$ D[-def, {+NPI/+neg}]

b. Num[-atomic] $\leftrightarrow$ $\lambda P.\lambda x.P(x) \wedge \neg\text{atom}(x)$

Given the rules, [-atomic] has two allosemes which compete for insertion at LF. The elsewhere case in (88b) is Harbour's denotation. This denotation will be inserted at LF unless there is an NPI or negative indefinite terminal in its local context. In that case, the elsewhere rule will be blocked in favor of the more specific rule in (88a). According to this rule, the denotation of [-atomic] will be that of an identity function.

---

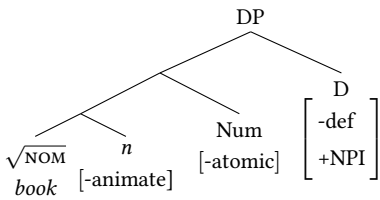
[25] For Collins and Postal (2014), *any* = [NEG SOME].

[26] One might wonder whether it is necessary to have two different feature bundles, and two separate denotations for *any/yamarch* and *no* or whether a negative denotation like the one proposed by Collins and Postal (2014) suffices. In terms of parsimony, having the same denotation for *no* and *any*, as Collins and Postal (2014) do, is an advantage. However, as Y. Sudo (p.c.) points out such denotation of *any/yamarch* should not involve negation, as it would predict the wrong truth-conditions in various cases, e.g. under (semantically interpreted) negation, conditional antecedents, sentences with multiple NPIs, etc. Rather, the denotation of *any/yamarch* must be standardly built on a simple existential quantifier (some analyses involve some additional mechanisms on top of that, e.g. Chierchia 2013). Perhaps a solution to reconcile this issue is to fully endorse Collins and Postal's proposal according to which the negative element that NPIs are decomposed into must raise out of D into the clause. For the purpose of this paper, I remain neutral as to whether such an analysis is needed to account for the plural facts.

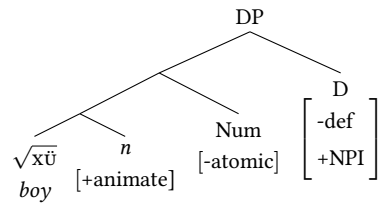
The syntactic structure that I have proposed for DPs in Alasha Mongolian allows us to locate the feature bundle for the NPI as realizing D. Thus, in downward entailing contexts, the DP structure that is transferred to LF is illustrated in (89a) and (89b) for inanimates and animates respectively.

(89) LFs of plural marked nouns in downward entailing contexts

a. *nom-o:d* 'book-PL'



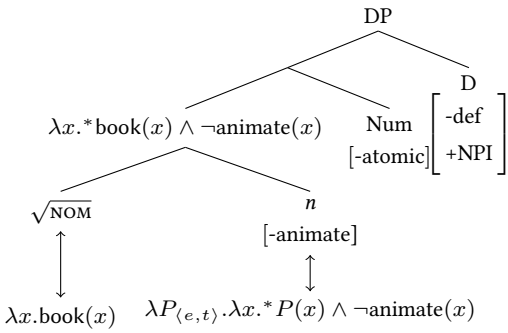
b. *xüch-ü:d* 'boy-PL'



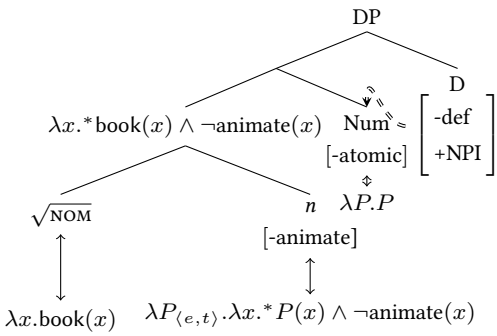
Importantly, as both LF structures show, the structural description in (84) for the interpretation of the plural as inclusive is met: [-atomic] is the immediate scope of a negative indefinite. This allows for D to trigger allosemy on Num, i.e. (88a). In particular, the derivation proceeds as in (90), illustrated with an inanimate noun. The derivation would be identical for animate nouns, with the exception of the [+animate] feature.

(90) Semantic derivation of *nom-o:d* in a downward entailing context

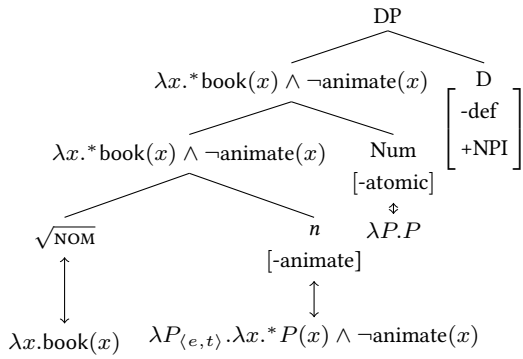
a. $[\![n]\!]([\![\sqrt{\text{NOM}}]\!])$



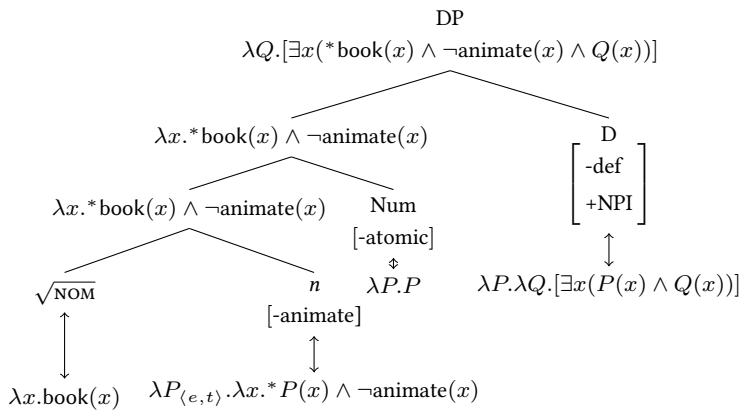
b. D triggers allosemy of (88a) on Num



c. $[\![\text{Num}]\!]([\![[n\ \sqrt{\text{NOM}}]]\!])$



d. ⟦D⟧(⟦[Num *n* $\sqrt{\text{NOM}}$]⟧)



The semantic composition proceeds bottom-up, as is standard, by composing the root with the nominalizing *n* head. The result in (90a) is a number neutral constituent that has atoms and and their sums in its extension (e.g. {*a, b, c, ab, ac, bc, abc*}). The next step in the derivation is the trigger of allosemy as in (90b): [-atomic] occurs in the context of [-def, +NPI] which meets the contextual specification for the allosemy rule in (88a). As a result, and given the Subset Principle, the insertion of the elsewhere alloseme for [-atomic] is blocked. Instead, the more specific rule is applied. According to this rule, [-atomic] is an identity function. When composing with the number neutral constituent in (90c), [-atomic] has no effect on it, passing along its denotation to the next higher node. By virtue of [-atomic] being an identity function, the extension of the noun still has both atoms and their sums. The last step is the composition of this just-created node and the determiner head, given in (90d).

The derivation has the desired result which is a plurality that also contains single atoms. Crucially, the derivation of plural-marked nouns in downward entailing contexts differs from their derivation in upward entailing contexts regarding the choice of denotation inserted for [-atomic]. In upward entailing contexts, as illustrated in (71), there is no NPI or negative indefinite in D; as a result, the application of the context sensitive allosemy rule in (88a) is blocked. Instead, the elsewhere rule for [-atomic] is applied, which restricts the extension of the noun to only sums.

There are some important benefits of deriving the ambiguity in this way. First, there is no need to postulate the absence of [-atomic] with plural-marked nouns that are interpreted

inclusively. This fact, as argued at length by Martí (2020a), allows us to maintain the cross-linguistic typology of number that Harbour's (2011; 2014) theory is set out to capture. Second, the analysis relies on the syntactic structure that is fed to LF and includes a mechanism responsible for neutralizing non-atomic plural interpretations. In particular, it captures the insight from the pragmatic competition approaches that the morpho-syntactic expression of plural-marked nouns is the same across the board, i.e. they are always [-atomic], and only the meaning is affected. In this respect, it is compatible with the claims made by Martí (2020a) and presents itself as an alternative to other structural ambiguity accounts. Last but not least, there is a methodological advantage. Given the strict locality conditions for allosemy and the Sense Insertion rules for [-atomic], it only takes a single interpretable feature that intervenes between D and Num to block alloseme selection. In other words, the account is "fragile" in that it is easily falsifiable. Like Deal (2019); Erlewine (2020), I take this aspect to be a virtue of the theory.

6.4 Adding (non-classificatory) APs and numerals into the mix

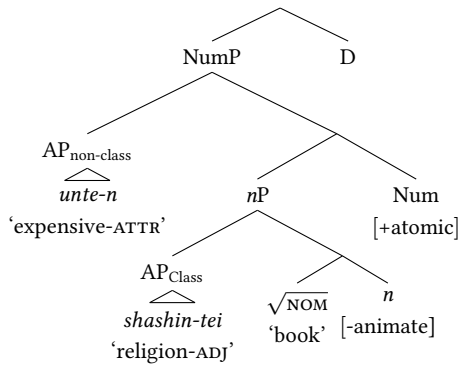
Up until this point, I have argued that a major difference between animate and inanimate nouns is that the former always project NumP, but the latter need not. I have argued, though, that it is possible for inanimate nouns to project NumP if they are overtly plural-marked, for instance. The question that arises now is whether these nouns can also project NumP when they are unmarked. The way that the system is set up does not preclude Num to be specified as [+atomic] when the noun is [-animate]. That is, it must be in principle possible to find cases where unmarked [-animate] nouns like *nom* are actually not number neutral but singular. This is the exact situation that we find with non-classificatory APs and numerals.

6.4.1 The case of APs

Non-classificatory APs must precede classificatory ones according to the word order facts in (34). What is more, the former but not the latter, interact with number information in a non-trivial manner. In particular, the former belong to the subclass of strongly distributive adjectives. I take this set of facts to propose the following: classificatory APs are adjoined to the domain of class which is lower in the structure (Alexiadou et al., 2007; Svenonius, 2008; Wiltschko, 2014; Dékány, 2021), i.e. *n*P; non-classificatory APs are adjoined higher in the DP (Cinque, 2005, 2010, 2023; Svenonius, 2008; Dékány, 2021). In particular, they are adjoined to NumP. The structure of the DP when both types of APs are present is given in (91a) for unmarked [+atomic] nouns, and in (91b) for plural-marked [-atomic] nouns.

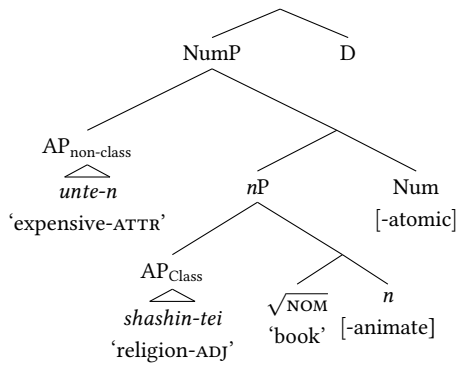
(91) a. unmarked [+atomic] inanimate noun modified by APs

DP ⇔ *unte-n shashin-tei nom* 'expensive religious book'



b. Plural-marked [-atomic] inanimate noun modified by APs in upward entailing contexts

DP ⇔ *unte-n shashin-tei nom-o:d* 'expensive religious books'



What we can conclude from the structures is that, once again, the difference between unmarked inanimate nouns which are number neutral and unmarked inanimate nouns that are strictly singular is the absence or presence of Num. This difference is, however, obscured by the lack of overt exponents at PF. In fact, given our VI rules in (72), if Num is [+atomic], there will be no overt vocabulary item associated with it, which has the same phonological effect as there being no Num: the noun will remain unmarked in both cases. If, on the contrary, the noun is overtly plural-marked, that can only be because Num is [-atomic].

In terms of the semantics, projecting Num leads to an interpretive difference between the two types of unmarked inanimate nouns, though. The noun will be interpreted as a singularity if [+atomic], but as a plurality if [-atomic]. This explains the vague numeral modification facts with adjectives in (54): [+atomic] returns a set of atoms which does not satisfy the cumulativity requirement imposed by vague numerals. If [-atomic], then the NP has cumulative reference and modification by vague numerals is ensured.

The semantics of the [+atomic] DP in (91a) is provided in (93), and the semantics of the [-atomic] DP in (91b) is provided in (94). Following a degree-semantics framework (Cresswell, 1976; von Stechow, 1984; Heim, 2001), I will assume that while classificatory APs do not introduce a

degree variable in the semantics because they are non-gradable, non-classificatory ones do. Their semantics are given in (92).[27]

(92) a. $[\![\text{unten}]\!] = \lambda x.\exists d[\text{expensive}(x) \geq d]$

b. $[\![\text{shashintei}]\!] = \lambda x.\text{religious}(x)$

(93) *unten shashintei nom* 'expensive religious book'

a. $[\![\text{shashintei } n\ \sqrt{\text{NOM}}]\!] = \lambda x.{}^*\text{book}(x) \wedge \neg\text{animate}(x) \wedge \text{religious}(x)$

b. $[\![\text{[+atomic] shashintei } n\ \sqrt{\text{NOM}}]\!] =$
$\lambda x.{}^*\text{book}(x) \wedge \neg\text{animate}(x) \wedge \text{atom}(x) \wedge \text{religious}(x)$

c. $[\![\text{unten [+atomic] shashintei } n\ \sqrt{\text{NOM}}]\!] =$
$\lambda x.\exists d[{}^*\text{book}(x) \wedge \neg\text{animate}(x) \wedge \text{atom}(x) \wedge \text{religious}(x) \wedge \text{expensive}(x) \geq d]$
'The property of being a religious book-atom which is *d*-expensive'

(94) *unten shashintei nom-o:d* 'expensive religious books' (exclusive plural)

a. $[\![\text{shashintei } n\ \sqrt{\text{NOM}}]\!] = \lambda x.{}^*\text{book}(x) \wedge \neg\text{animate}(x) \wedge \text{religious}(x)$

b. $[\![\text{[-atomic] shashintei } n\ \sqrt{\text{NOM}}]\!] =$
$\lambda x.{}^*\text{book}(x) \wedge \neg\text{animate}(x) \wedge \neg\text{atom}(x) \wedge \text{religious}(x)$

c. $[\![\text{unten [-atomic] shashintei } n\ \sqrt{\text{NOM}}]\!] =$
$\lambda x.\exists d[{}^*\text{book}(x) \wedge \neg\text{animate}(x) \wedge \neg\text{atom}(x) \wedge \text{religious}(x) \wedge \text{expensive}(x) \geq d]$
'The property of being a non-atomic plurality of religious books which are *d*-expensive'

In both (93) and (94), the *n*P first composes with the classificatory AP via Predicate Modification (Heim and Kratzer, 1998), and then the output of this operation saturates the first argument of [±atomic]. Afterwards, non-classificatory APs compose with the [±atomic] constituent, again via Predicate Modification.

This manner and order of semantic composition does not interfere with the allosemy rules for [-atomic]. It is important to remember that one of the necessary conditions for allosemy, which was the same as for allomorphy, was that the two terminals involved were local within the same extended projection. Modifiers, or elements in specifier position, do not disrupt the locality between two heads.[28] In the structure in (91b), D and Num satisfy the locality condition as there is no intervening head between them. Thus, in downward entailing contexts when D is [-def, {+NPI/+neg}] and Num is [-atomic], the allosemy rule in (88a) must apply.[29]

The situation in predicative contexts differs due to the fact that the syntactic structure is not as in (91). For ease of exposition, I assume that predicative adjectives have a Small Clause-like

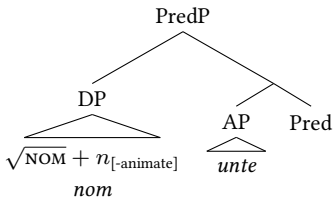
[27] Svenonius (2008) observes that classificatory APs, or APs adjoined lower in the extended projection of the noun, are generally non-gradable across languages. However, see Dékány (2021, ch.2: p.46-47) for some possible counterexamples of gradable APs that may appear lower in the structure, e.g. color adjectives.

[28] See Bobaljik (2012); Bobaljik and Harley (2017).

[29] Another argument for the application of allosemy comes from the timing of the composition. [-atomic] must compose with the *n*P before the non-classificatory AP does. This entails that alloseme for [-atomic] must be inserted before the *n*P saturates its argument. The timing of operations is therefore as illustrated for unmodified plural nouns in (90): (i) the *n*P is composed; (ii) D triggers allosemy on Num and the context specific Sense Insertion rule is applied; (iii) Num composes with *n*P; and (iv) the non-classificatory AP enters the semantic composition.

structure (Chomsky, 1981; Stowell, 1981; Bowers, 2001, for an overview). Under this approach, the AP is not part of the extended projection of the NP and is not adjoined to Num; instead, the unmarked NP has the structure in (70a) (i.e. it lacks NumP), it is merged in a specifier position and acts as the subject of the predication. As a result, no number restriction is imposed on the interpretation of the noun. The structure is illustrated in (95), where the PredP label is used purely pretheoretically.

(95) Predicative AP construction



6.4.2 The case of precise numerals

Numerals modifying nouns must not only precede the noun they modify, but also any AP-modifiers. In fact, if a (non-classificatory) AP precedes the numeral, the sequence is unacceptable, as already shown in (41). Numerals must follow other DP-internal constituents such as possessors, which are located high in the DP (Gong, 2021; Toquero-Pérez, 2023). This is shown in (96).

(96) a. xüch-üd-in dulu-n xunde-n nom
child-PL-GEN seven-ATTR heavy-ATTR book
'The children's seven heavy books' Poss > # > AP > N

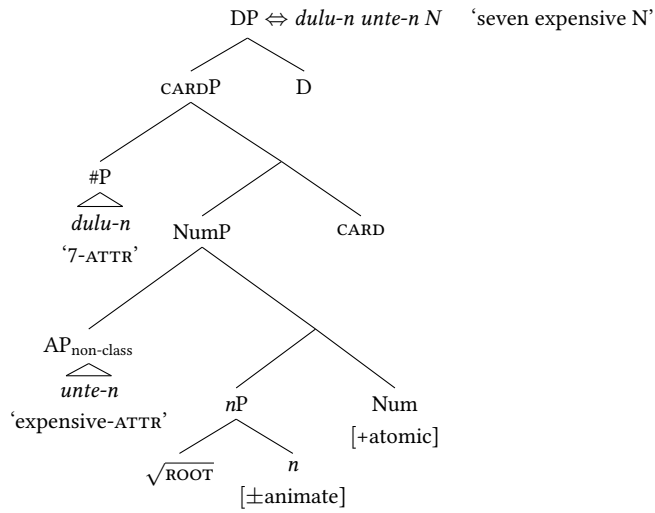
b. * dulu-n xüch-üd-in xunde-n nom
seven-ATTR child-PL-GEN heavy-ATTR book
Int.: 'The children's seven heavy books' # > Poss > AP > N

Given the interaction of APs with Number and the fact that they must always follow numerals, I propose that numerals must be higher than NumP. In addition, assuming that possessors generally occupy a position higher than NumP, around the DP region (e.g. Spec,DP Abney 1987; Corver 1990), numerals must be located lower than D.[30] I take this position of numerals to be the specifier of a functional projection called CARD(inality)P (Scontras, 2013, 2014; Martí, 2020b; Pancheva, 2022, 2023).[31] In Mongolian, this CARD head combines only with [+atomic] nouns. The structure for numerically modified NPs is in (97).

(97) #P in Spec,CARDP

[30] If numerals and APs were adjuncts adjoined to the same projection, e.g. NumP, nothing would in principle prevent a flexible ordering. There are generally no syntactic selectional requirements for adjuncts (Svenonius, 1994; Chomsky, 1994, 1995; Adger, 2003). The strict ordering in (41) would need to be stipulated.

[31] Scontras (2013, 2014) and Martí (2020b) assume ,without independent motivation, that Num is merged immediately higher than CARD. Pancheva (2022, 2023) shows that the position of CARD, which she labels as MEAS, can be above and/or below Num. The word order facts indicate that CARD must be higher than Num in Alasha Mongolian.



The hierarchical structure in (97) derives the word order facts: numerals must precede APs because they are adjoined to a higher functional projection. In addition, CARD selects for a [+atomic] complement which rules out overtly-plural marked nouns.

Semantically, I take the view that numerals themselves denote numbers of type *n*, as in (100). Thus, a measure expression is required to compose them with the predicate nominal (Krifka, 1989, 1995; Hackl, 2000; Scontras, 2013, 2014, 2022; Martí, 2020b; Pancheva, 2022, 2023). That is the role of CARD whose meaning is (101a), based on Pancheva's (2022; 2023) denotation for singular-selecting CARD heads.[32]

(100) $[\![\text{dulun}]\!] = 7$

(101) a. $[\![\text{CARD}]\!] = \lambda P_{\langle e,t\rangle}.\lambda n.\lambda x.{}^{*}P(x) \wedge |x| = n$

b. $[\![\text{dulun CARD [+atomic] } n\text{P}]\!] = \lambda x.{}^{*}[\![\text{[-atomic] } n\text{P}]\!](x) \wedge |x| = 7$

CARD takes a predicate of atomic individuals, P, a numeral, n, and returns a predicate of atoms and their sums with cardinality n via Link's (1983) '*' operator. In other words, CARD

[32] Alternatively, one could assign CARD a denotation based on Ionin and Matushansky's (2006; 2018, ch.2: p.13)semantics for numerals.

(98) $[\![\text{CARD}]\!] = \lambda P_{\langle e,t\rangle}.\lambda n.\lambda x.\exists S[\Pi(S)(x) \wedge |S| = n \wedge \forall s \in S \rightarrow P(s)]$
'A set of individuals S is a partition Π of a plural individual x if x is the sum of all members of S and the members of S do not overlap.'

(99) $[\![\textit{dulun}\text{ CARD [+atomic] } n\text{P}]\!] = \lambda x.\exists S[\Pi(S)(x) \wedge |S| = 7 \wedge \forall s \in S \rightarrow$
$[\![\text{[+atomic] } n\text{P}]\!](s)]$

The semantics of CARD in (98)introduces a partition, Π, in the body of the function. One of the conditions of the partition is that its members must not overlap. Plurals are cumulative which entails that the members composing the plurality overlap. As a result, the condition imposed by the partition rules out the possibility that the nominal argument of the numeral denotes a plurality. The feature [+atomic] on Num creates a singularity ensuring the non-overlapping of the members in the extension of the constituent that saturates CARD's first argument.

reintroduces the sums into the extension of the count NP consisting only of atomic minimal parts: $\{a, b, c\} \rightarrow \{a, b, c, ab, ac, bc, abc\}$.

6.4.3 ATTR-marking on prenominal modifiers

There is one final aspect about non-classificatory APs and numerals that needs to be addressed. This involves ATTR-marking. The attributive marker /-*n*/ surfaces on these high modifiers when they occur prenominally, but it does not surface on them in predicative position. While more work needs to be done to fully understand the distribution of the attributive morpheme in the language, I speculate that this marker is a reflex of agreement.

As Alexeyenko and Zeijlstra (2020, 2021) and Corver (2021) observe, attributive morphemes across languages seem to serve the purpose of marking 'nominality'. By 'nominality', I mean that they stand in a local relation with a noun they directly modify. In some cases, like for example German or Dutch, this nominality is encoded via the overt exponence of the noun's φ-features (or at least a subset) such as gender or number. Against this background, Corver (2021) proposes that the ATTR morpheme on Dutch prenominal adjectives is the result of spelling out the feature bundle of the noun. The affix is then realized on the AP via Spec-Head agreement.

We could adopt a similar analysis for ATTR-marking in Alasha Mongolian: *-n* on modifiers is the result of nominal concord. I assume that concord features on the relevant non-head constituents attach in the form of unvalued features which will receive a matching value. This all occurs post-syntactically (Bonet, 2013; Norris, 2014, 2017a,b; Deal, 2016b). This entails that the heads of non-classificatory APs and numerals receive an unvalued uninterpretable [uAGR:__] feature post-Spell-Out, where 'AGR' represents any potential φ-feature(s): [±animate, ±atomic]. This [uAGR:__] feature will copy a value available in the extended projection of the NP. The copying of the feature values is represented in (102) for non-classificatory adjectives.

(102) a. $[_{\text{NumP}}\ \text{AP}_{[u\text{AGR:}\_]}\ [_{\text{Num'}}\ \text{Num}_{[\pm\text{atomic}]}\ [_{n\text{P}}\ n_{[\pm\text{animate}]}\ \sqrt{\text{ROOT}}]]]$

b. $[_{\text{NumP}}\ \text{AP}_{[u\text{AGR:}\underline{val}]}\ [_{\text{Num'}}\ \text{Num}_{[\pm\text{atomic}]}\ [_{n\text{P}}\ n_{[\pm\text{animate}]}\ \sqrt{\text{ROOT}}]]]$

The valued AGR feature in (102b) will then be spelled out as /-*n*/ at the point of vocabulary insertion if the stem of the adjective that it attaches to ends in a vowel. When the numeral, projecting a #P, is part of the derivation, it will also receive an unvalued [uAGR:__] feature post syntactically. This is shown in (103).

(103) $[_{\text{CARDP}}\ \#\text{P}_{[u\text{AGR:}\underline{val}]}\ [_{\text{CARD'}}\ \text{CARD}\ [_{\text{NumP}}\ \text{AP}_{[u\text{AGR:}\underline{val}]}\ [_{\text{Num'}}\ \text{Num}_{[+\text{atomic}]}\ [_{n\text{P}}\ n_{[\pm\text{animate}]}\ \sqrt{\ }]]]]]$

(104) $[u\text{AGR:}\underline{val}] \Leftrightarrow$ *-n*/$\sqrt{\text{A/\#}}$-V 'Map the terminal to *-n* if the A/#-stem ends in a vowel'

In predicative contexts, APs and #P do not occur DP-internally, e.g. (95). Thus, no unvalued [uAGR] feature is inserted post-syntactically on the adjectival and numeral terminals, thus precluding concord. The relevant VI rule in (104) does not apply, and no attributive marker is exponed in predicative contexts.

7. Broader implications

I started the paper by positing a series of questions that the data from Alasha Mongolian would help shed light on. We can now go back to answering each of these questions.

The first question was concerned with the morpho-syntactic structure of unmarked nouns. I have argued that unmarked nouns are syntactically ambiguous. In particular, unmarked number neutral nouns are syntactically impoverished because the NumP hosting number features is absent from the derivation and so the noun is underdetermined for number. They are only marked for [-animate]. Singular-denoting unmarked nouns, on the other hand, do project NumP. This was the case of all animates and also unmarked inanimates which are AP/numerically modified. The animacy split is neutralized in the plural form because [-atomic] is part of the derivation projecting NumP. Variation in the interpretation of nominals is thus located in the abstract morpho-syntactic pieces available within and across languages (see also Deal, 2016a, 2017).

An innovation of this paper is the diagnosing of (countable) number neutrality via QAs like *many/olin*. This is a significant test since it relies on the mereological structure of the noun. In Alasha Mongolian, *olin* ('many') is compatible with inanimate unmarked NPs as long as they are not modified by a non-classificatory adjective. This observation contrasted with unmarked animates, which are incompatible with *olin*. These observations further support the analysis that inanimate unmarked NPs that occur bare (i.e. with no modifiers) in Alasha Mongolia are number neutral and have sums of atoms, in addition to single atoms, in their extension. This is a promisingly reliable diagnostic for countable number neutrality since it opens up the possibility to probe the question of number neutrality of unmarked NPs in languages like Turkish where arguments have been made in both directions: Bale et al. (2011) argue for unmarked NPs as number neutral, whereas Sağ (2022) has recently challenged their arguments.

The second question addressed the location of Number in the structure and its relation to countable modifiers such as numerals and size adjectives. Based on the data from APs and numerals (e.g. the interaction with singular/plural interpretation, NP-internal word order facts, among others), the account supports the traditional view that Number is located between *n* and D (Ritter, 1991; Cowper, 2005; Cowper and Hall, 2009, 2012). Furthermore, it provides empirical evidence for the hypothesis that Number can be lower than numerals (Pancheva, 2022, 2023), and against the view that numerals enter the syntactic derivation and semantic composition before Number does, e.g. Scontras (2013, 2022); Martí (2020b). It also goes against approaches that exclusively locate number higher than D, e.g. Sauerland (2003).

Building on the discussion of numerals, Alasha Mongolian sheds light on the debate as to whether numerals universally combine with pluralities (Bale et al., 2011; Bale and Khanjian, 2014) or with singularities (Ionin and Matushansky, 2006, 2018; Alexiadou, 2019) despite morphological (un)markedness. The 'Plural-only' view, from Bale et al. (2011), holds that numerals require the noun they combine with to denote a plurality; in those languages where plural is not obligatory or allowed, morphologically unmarked nouns are reported to be semantically number neutral. Bale et al. (2011) propose a semantic universal which they call the 'Strong Thesis': numeral modification is restrictive, because modification in language is restrictive. If correct, the Strong Thesis predicts that numerals cannot combine with singularities. Given the data from Alasha Mongolian, we can conclude that while numerals can combine with bare unmarked NPs, these NPs are definitely not number neutral. Alasha Mongolian, thus, casts doubt on the universality of the Strong Thesis: it is too strong, and numerals can in fact compose with strictly atomic predicates. These facts have also been corroborated by Pancheva (2022, 2023) for Bulgarian.

On the other hand, the 'Singular-only' view holds that numerals require the noun to denote a singularity; variation in morphological number is due to the presence or absence of uninterpretable number agreement. While the facts are in principle compatible with this approach, they present a non-trivial complication to the hypothesis that number morphology

is uninterpretable. One could perhaps build the argument that /-*v:d*/ is pure Agree(Num, *n*) in the case of inanimates but this would face the challenge of PL-marked animate nouns and PL-marked NPs modified by non-classificatory adjectives in attributive position. In the case of singular-marking on nouns, if this was also uninterpretable agreement, we would need to explain its semantic effects with vague numerals and non-classificatory adjectives. Besides, if the plural morpheme is uninterpretable agreement, we would need to find an independent explanation for the inclusive/exclusive ambiguity. Therefore, reducing number-marking to uninterpretable agreement is also too strong.

We can conclude that languages differ as to whether numerals require the nominal they modify to be a plurality or a singularity, and the challenge that remains is to explicate and model such variation. A promising way to account for such variation is proposed by Pancheva (2022, 2023). Under the assumption that numerals are introduced by a (null) measure expression (i.e. CARD) in the extended projection of the noun that c-selects for Number, the variation will stem from the specification of this head rather than the numeral itself. For instance, for numerals higher than 1, CARD_1 will only be compatible with [+atomic] nouns, in which case it will have to introduce a pluralizing function; CARD_2 will be compatible with [-atomic] nouns and will not have pluralizing semantics because the noun is already pluralized. Thus, languages will differ depending on whether they have CARD_1 (Alasha Mongolian, Finnish, Turkish), CARD_2 (English) or both (Bulgarian). The broader conclusion is that number marking cannot be reduced to uninterpretable agreement on the noun; instead, variation depends on the location, availability and interpretation of number features in the nominal extended projection; the morpho-syntactic expression of number on Num, spelled-out on the head noun, is always interpretable (see Pancheva, 2022, 2023, for Bulgarian).

I have also motivated a tight relationship between size adjective modifiers and Number. In particular, the non-classificatory APs discussed here, which overlap with the class of stubbornly distributive adjectives, do not only require the noun to be marked for [±animate]. *n* is responsible for animating (and potentially individuating, see item 19) the nominal root; however, if this was the sole condition that enabled AP-modification, we would expect unmarked number neutral nouns to occur with non-classificatory APs. However, the fact that they do not signals that this class of modifiers is also sensitive to number-marking. Since that is the function of Num, then it follows that these adjectives be adjoined at least as high as Num. The hypothesis that NumP enables modification by this class of APs receives support from classifier languages like Hungarian (Csirmaz and Dékány, 2014; Dékány, 2021) or Teochew, Southern Min (Biggs and Zhuosi, 2022). In Hungarian, for instance, non-classificatory APs including, but not limited to, size, length, height, weight are adjoined higher than classifiers whose position and role may be equated to that of Num. Thus, the pattern that emerges cross-linguistically is schematized in (105).

(105) $\text{AP}_{\{\text{non-classificatory/dimensional}\}} > \{\text{Num/ CL}\} > \text{N}_{\text{countable}}$.

With respect to the third question, i.e. the exclusive/inclusive interpretation of the plural morpheme, I developed an account which locates the ambiguity at the syntax-semantics interface. Namely, just like vocabulary items can compete for insertion at PF given the Subset Principle, so can 'meanings' at LF. The exclusive meaning of the plural is taken to be the default one, which is blocked in the presence of a true negative indefinite or an indefinite NPI, which may be overt or covert. While the analysis seems to make many empirically appropriate predictions for languages that also display the same ambiguity, e.g. English, it also faces some shortcomings which need

to be probed in detail (see item 26). However, if the analysis is on the right track, the following parallel emerges across the interfaces: just like languages differ in the inventory of VI rules at PF, so will they in the inventory of allosemy rules at LF.

Furthermore, typologically, Alasha Mongolian patterns with Buriat (Bylinina and Podobryaev, 2020) in that both a subset of unmarked and plural-marked NPs are number neutral, with some restrictions. Given the cross-linguistic data available, we can divide languages' systems that distinguish between unmarked and number-marked (count) nouns into four types depending on the interpretation of the unmarked and marked forms. By unmarked, I take an NP that has no number exponent; by marked, I mean an NP that (generally) has a plural-exponent or whose root has undergone suppletion triggered by a number feature, most likely plural.

Type 𝔸 includes languages in which the unmarked form of the NP is strictly singular and the marked form is exclusively plural. Pure Type 𝔸 languages are not commonly reported in the literature, but an example of such a system is in fact commonly attested: singulatives and their plurals in languages like Arabic, Welsh or Breton. Singulative-marked nouns in these languages are strictly singular and their plural forms are exclusively plural (see Mathieu and Dali 2021, p.21 for Tunisian Arabic, Borer and Ouwayda 2021, p.147 for Lebanese and Grimm 2012, p.152 for Welsh).[33] A brief note on these systems is in order. In these languages, the term 'singulative' is used to refer to a dedicated morpheme that is added to an unmarked set of roots which usually denote some type of mass or underspecified quantity. The 'singulative' changes the nominal class properties of the root such as gender and/or countability, and indicates that the derived nominal is singular count (Borer, 2005; Mathieu, 2012; Ouwadaya, 2014; Borer and Ouwayda, 2021; Mathieu and Dali, 2021). That is the role of *-e* in Lebanese Arabic and *-a* in Tunisian Arabic, but also *-yn* in Welsh. As the examples in (106) (Borer and Ouwayda, 2021), (107) (Mathieu and Dali, 2021) and (108) (Grimm, 2012) show, singulative-marked nouns can be overtly pluralized in which case the order of morphemes is always ROOT-(GEN.)SINGL-PL.

(106) Lebanese Arabic

a. laymoun
orange
'orange (mass)'

b. laymoun-e
orange-F.SINGL
'an orange'

c. laymoun-e-et
orange-F.SINGL-PL
'(2 or more) oranges'

(107) Tunisian Arabic

a. toffeħ
apple.COLL
'apples'

b. toffeħ-a
apple-F.SINGL
'an apple'

c. toffeħ-a-at
apple-F.SINGL-PL
'(2 or more) apples'

(108) Welsh

a. grawn
grain
'grain' (mass)

b. gron-yn
grain-M.SINGL
'a grain'

c. gron-yn-au
grain-M.SINGL-PL
'(2 or more) grains'

[33] There are two potential cases of pure Type 𝔸 languages: Wolof (Fong, 2021, 2023) and French. Fong argues at length that the unmarked form of nouns in Wolof receives a strictly singular interpretation and never a number neutral one. However, Fong makes no explicit commitments about the exact interpretation of plurals in the language. Tamba et al. (2012) make no such commitments either. In the case of French, like in Wolof, the unmarked form is strictly singular. According to Corbett (2000, p.20), French plural implies 2 or more (as opposed to English where it implies 1 or more). This is, however, controversial. Native speaker judgments of French indefinite plurals in downward entailing environments and questions align with English, thus contradicting Corbett's reporting. I would like to thank Fanny Daubigny and Hélène Domon (p.c.) for discussion of the French data.

While it is not uncommon to bundle the individuating/gender and number-marking properties of the singulative morpheme as part of a single terminal that represents a Number head, there is a possible alternative analysis that is consistent with both the facts and the insights from previous proposals. That involves analyzing the singulative morpheme, exponed as *-e/-a/-yn* in the above examples, as a nominalizer, rather than an actual number morpheme. As a nominalizer, it combines with the root, individuates it (i.e. makes it countable as opposed to non-countable) and marks feminine gender in Arabic or masculine gender in Welsh.[34] In the case of Welsh, it triggers suppletion on the root too. All these are common properties of *n*-heads.[35] Therefore, under this analysis, the singulative in these languages is not the exponent of a number morpheme but a nominalizing head. The actual number morpheme realizing [+atomic] in (106b), (107b) and (108b) is null. The plural of the singulative in (106c), (107c) and (108c) is, however, marked with an overt exponent for [-atomic]. As a result, these cases fall under the umbrella of Type 𝔸.

This entails that the underlying structure for the NPs in (106) is as schematized in (109). The [±div] on *n*, taken from Smith (2021), represents Borer's notion of Divison: whether the noun has 'divided' reference and is therefore countable or 'undivided' reference and thus non-countable.

(109) a. [$\sqrt{\text{ORANGE}}$ $n_{[\text{-div, -fem}]}$]$_{n\text{P}}$ — *laymoun* 'orange'
laymoun Ø

b. [[$\sqrt{\text{ORANGE}}$ $n_{[\text{+div, +fem}]}$]$_{n\text{P}}$ $\text{Num}_{[\text{+atomic}]}$]$_{\text{NumP}}$ — *laymoun-e* 'an orange'
laymoun -e Ø

c. [[$\sqrt{\text{ORANGE}}$ $n_{[\text{+div, +fem}]}$]$_{n\text{P}}$ $\text{Num}_{[\text{-atomic}]}$]$_{\text{NumP}}$ — *laymoun-e-et* 'oranges'
laymoun -e -et

Type 𝔹 consists of those languages' systems where the unmarked form is strictly singular, but the marked form may be inclusively plural. Systems of this type are rather common and include English (Sauerland, 2003; Sauerland et al., 2005; Zweig, 2009), Spanish (Martí, 2008, 2020a), and animate nouns in Buriat (Bylinina and Podobryaev, 2020) and Alasha Mongolian;[36] Type ℂ concerns systems like Western Armenian (Bale et al., 2011; Bale and Khanjian, 2014) or Brazilian Portuguese (Müller, 2002; Martí, 2020a): the unmarked form is number neutral but the plural-marked one is exclusively plural; Type 𝔻 groups systems where nouns unmarked for number may be number neutral and plural-marked nouns may be inclusively plural, e.g. inanimates in Buriat and Alasha Mongolian. These patterns are summarized on Table 6, which is an extended version of Table 1.[37]

[34] In Welsh, there is a feminine singulative allomorph *-en* which is the same as in Breton (Nurmio, 2016).

[35] For the nominalizing status of the *-a* and similar singulative morphemes across languages, see Acquaviva (2008); Kramer (2015); Kouneli (2020). For Borer (2005); Ouwadaya (2014); Borer and Ouwayda (2021) the individuating function is performed by Div(ision), which for them is realized by plural-morphemes in languages like English or classifiers in languages like Mandarin. Starting with Bale and Barner (2009), the Div head has been equated not to Number (or plural) but to *n*, making a distinction between countable and non-countable roots, e.g. Smith (2021); Toquero-Pérez (2024).

[36] According to Sağ's (2022) analysis, and excluding non-case marked NPs and kinds, Turkish would be an example of a Type 𝔹 system: unmarked NPs (i.e. bare singulars) denote a singularity whereas bare plurals are inclusive pluralities. The reports about the interpretation of the plural seem to differ from the ones in Mathieu and Dali (2021, p.108-111), though.

[37] The '*' means that the relevant morpho-syntactic expression (e.g. unmarked vs. marked) cannot be associated with the intended interpretation (e.g. SNG = singularity vs. PLR = plurality). If the relevant

Table 6. The interpretation of number in languages with unmarked and marked forms (final version)

		Unmarked NP		Marked NP	
		SNG	PLR	SNG	PLR
Type 𝔸	*Arabic*$_{\text{singulatives}}$	✓	*	*	✓
	Welsh$_{\text{singulatives}}$	✓	*	*	✓
Type 𝔹	*English*	✓	*	✓	✓
	Spanish	✓	*	✓	✓
	Buriat$_{\text{[+anim.]}}$	✓	*	✓	✓
	A. Mongolian$_{\text{[+anim.]}}$	✓	*	✓	✓
Type ℂ	*W. Armenian*	✓	✓	*	✓
	B. Portuguese	✓	✓	*	✓
Type 𝔻	*Buriat*$_{\text{[-anim.]}}$	✓	✓	✓	✓
	A. Mongolian$_{\text{[-anim.]}}$	✓	✓	✓	✓
Type 𝔼	*unattested (yet)*	*	✓	✓	*

I do not intend to provide an answer as to what is driving the variation between the different types of systems cross-linguistically. I leave this for future research. I want to indicate, though, that all these types share two general features: (i) unmarked forms must include at least single atoms in their extension, (ii) and PL-marked ones must at least include their sums. In other words, the unmarked form must refer to at least a the single atoms, while the PL-marked one must refer to at least an exclusive plurality. We can, thus, formulate the (potentially universal) generalization in (110):

(110) ***The morpho-semantic number markedness generalization***
If a language makes a morphological distinction between unmarked and marked forms in the domain of count nouns,
   a. the unmarked form must at least contain individual non-overlapping atoms; and
   b. the marked one must at least contain sums of atoms.

If this generalization is correct, it predicts that there should be no language of Type 𝔼 on Table 6: this would be a language in which unmarked forms of nouns denote exclusive pluralities (e.g. $\{ab, bc, abc\}$) whereas their marked counterparts denote a set of atoms (e.g. $\{a, b, c\}$). An example of such a potential language is given in (111) with pseudo-English.

(111) What a Type 𝔼 system would look like
   a. (This) dog-Ø = '2 or more dogs' (*unmarked, but exclusively plural*)
   b. (These) dog-s = '1 dog' (*PL-marked, but strictly singular*)

Under the proposed analysis here, such a language should be ruled out given that [+atomic] will restrict the denotation of the noun to the non-overlapping atoms, while [-atomic] will restrict

morpho-syntactic expression can be associated with one interpertation, a '✓' is assigned. This is so even if this interpretation is determined by certain factors (polarity, modification, etc.).

the extension of the noun to the sums. In case Number is not projected, the theory predicts that the result should be an unmarked number neutral noun.

The closest system that resembles Type 𝔼 is inverse number marking in languages like Dagaare (Grimm, 2010, 2012, 2018) (and potentially Kipsigis and Didinga as well Kouneli 2017, 2020). In Dagaare, as the (112)-(113) pairs show, the same morpheme *-ri* only marks the plural interpretation for one of the two nouns.[38]

(112) a. bíé ŋâ
child DEM.PROX.SG
'this child'

b. bíí-rí bà-má
child-PL HUM.PL-DEM.PROX.PL
'These (2 or more) children'

(113) a. bí-rì ŋâ
seed-PL DEM.PROX.SG
'this seed'

b. bíè à-má
seed NHUM.PL-DEM.PROX.PL
'These (2 or more) seeds'

In (112a), the unmarked form *child* triggers singular agreement on the demonstrative and it denotes a singelton set of atoms, whereas (112b) the *ri*-marked form triggers plural agreement and denotes an exclusive plurality. The inverse number patter is illustrated in (113) where the *ri*-marked form triggers singular agreement on the determiner and is strictly singular, but the unmarked form triggers plural agreement and denotes an exclusive plurality. The inverse pattern observed for (113) is restricted to what the authors refer to as "inherently plural" nouns. While this class of nouns seems to be a genuine counterexample to the generalization in (110), I am going to briefly argue that is only apparent building on insights from Kouneli (2020).

According to Kouneli (2020), number in these languages is split between a low position in *n*, where it is uninterpretable, and a high position in Number, where it is interpretable. Kouneli argues that the structure of inherently plural nouns such as *seed* in Dagaare is as in (114); I propose the VI rules for terminals in (115):

(114) $[[\sqrt{\text{SEED}}\ n_{[\text{-atomic}]}\ ]_{nP}\ \text{Num}_{[\pm\text{atomic}]}\ ]_{\text{NumP}}$ (*inherently plural nouns in Dagaare*)

(115) a. α[-atomic] ⇔ *-ri*/_Num[+atomic]

b. α[-atomic] ⇔ Ø/_Num[-atomic]

c. α[-atomic] ⇔ *-ri*

d. α[+atomic]⇔ Ø

In cases where *-ri* is exponed on the noun, Num must be [+atomic]; as a result, the D head agrees with it triggering singular, rather than plural agreement. At PF, the VI rules account for why the inherently plural noun has an exponent: [-atomic] on *n* is spelled out as *ri-* when Num is [+atomic], e.g. (115a). Again, *-ri* is not a Num-exponent (like the singulatives discussed above). This also explains, why *ri*-marked forms are strictly singular. In the cases where *-ri* is not exponed, while Num must be [-atomic] as the agreement in (113b) shows, a morphological operation called *Obliteration* (Arregi and Nevins, 2007) deletes the higher number feature in Number if it is identical to the low number feature in *n*: since both *n* and Num are [-atomic], Obliteration applies precluding the application of the elsewhere VI rule in (115c).[39] In terms of semantics, this

[38] Despite the tonal differences, Grimm (2012, ch.2) notes that the different surface forms of the PL-morpheme are allophones conditioned by the phonological properties of the root.

[39] I would like to thank Maria Kouneli for discussion of this issue.

explains why these unmarked forms are exclusively plural. Under these considerations, Dagaare actually resembles Type 𝔸.

Therefore, inverse number systems can be accommodated within the general insights of the generalization. This seems to point out that, in the event that a Type 𝔼 system is indeed attested, the explanation for that pattern would have to be potentially found in the underlying (and in some cases abstract) structure of the nominal expression which might obscure the mapping from syntax to morphology and semantics.

All in all, we can summarize the significance of the study of Alasha Mongolian in 3 classes: (i) the presence vs. absence of syntactic information may drive not only differences in exponence, but also yield distinctions in interpretation; what this entails is that number neutrality can be syntactically encoded, rather than lexically presupposed. Further evidence for this comes from looking at vague numerals and size adjectives. (ii) Number marking cannot be reduced to uninterpretable agreement on the NP; instead, variation lies on the location, availability and interpretation of number features in the nominal extended projection. (iii) Taken together these facts have consequences for the type of predicates that numerals can combine with: singular predicates or plural ones. The cross-linguistic observations about number point to a novel generalization connecting morphological (unmarked vs. (PL-)marked) and semantic (atoms vs. sums) markedness in the domain of count nouns.

Competing interests

No competing interest is declared.

Acknowledgments

I am incredibly grateful to Brian Tsagaadai for sharing his language and culture with me. Without his generosity and time, none of this would have been possible. This project would not exist if it wasn't for Travis Major who organized the field methods class at USC (during the spring of 2022). It was here that the seed for this project was planted. I am very grateful to Roumi Pancheva for numerous conversations and discussions over this project and the role of 'number' more generally, which we both share a deep interest in. Many ideas from those conversations over the years made it into the final version. I am also thankful to Alexis Wellwood and Antonio Cleani for discussion of several aspects of the semantics and the technical details. In addition, I would like to thank UCLA's *Syn/Sem* seminar, UCSC's *S-Circle* and the Universidad Autónoma de Buenos Aires' *Ling-Phil* reading group where parts of this work were presented. For other comments and discussion, I am grateful to Fanny Daubigny, Hélène Domon, Mia Gong, Maria Kouneli, Elango Kumaran, Carol-Rose Little, Ora Matushansky, Deniz Rudin and Tommy Tsz-Ming Lee. Before concluding, I must thank the two anonymous reviewers and the editors of the *Journal of Semantics*; in particular, my special thanks go the editors, Danny Fox and Yasutada Sudo, whose insightful comments and valuable feedback helped significantly improve the paper. All remaining errors are my own. This project was partially funded by NSF DDRI grant BCS-2315167 to Alexis Wellwood (PI), Roumyana Pancheva (Co-PI) and Luis Miguel Toquero-Pérez (Co-PI).

References

Abney, S. (1987). *The English Noun Phrase in its Sentential Aspect.* PhD thesis, MIT.

Ackema, P. and Neeleman, A. (2018). *Features of Person: From the Inventory of Persons to their Morphological Realization*. MIT Press.

Acquaviva, P. (2008). *Lexical Plurals: A Morphosemantic Approach*. Oxford studies in theoretical linguistics. Oxford University Press, Oxford, UK.

Adger, D. (2003). *Core Syntax*. Oxford University Press, Oxford.

Alexeyenko, S. and Zeijlstra, H. (2020). (Dis)obeying the Head-Final Filter. In *Proceedings of WCCFL 38*, pages 1–8. Cascadilla Proceedings Project.

Alexeyenko, S. and Zeijlstra, H. (2021). Linearization of complex modifiers: Ways of (Dis)obeying the Head-Final Filter. Unpublished Ms. University of Göttingen.

Alexiadou, A. (2019). Morphological and semantic markedness revisited: the realization of plurality across languages. *Zeitschrift für Sprachwissenschaft*, 38:123–154.

Alexiadou, A., Haegeman, L., and Stavrou, M. (2007). *Noun Phrase in the Generative Perspective*. Mouton de Gruyter, Berlin.

Arad, M. (2003). Locality constraints on the interpretation of roots: The case of Hebrew denominal verbs. *Natural Language and Linguistic Theory*, 21:737–778.

Arregi, K. and Nevins, A. (2007). Obliteration vs. impoverishment in the Basque g-/z- constraint. *University of Pennsilvania Working Papers in Linguistics*, 13:1–14.

Bach, E. (1986). Natural language metaphysics. In Barcan Marcus, R., Dorn, G. J., and Weingartner, P., editors, *Logic, Methodology and Philosophy of Science VII*, pages 573–595. Elsevier Science, Amsterdam.

Bale, A. and Barner, D. (2009). The interpretation of functional heads: Using comparatives to explore the mass/count distinction. *Journal of Semantics*, 26:217–252.

Bale, A., Gagnon, M., and Khanjian, H. (2011). Cross-linguistic representations of numerals and number marking. In Li, N. and Lutz, D., editors, *Proceedings of Semantics and Linguistic Theory (SALT) 20*, pages 582–598, Cornell University. CLC Publications.

Bale, A. and Khanjian, H. (2014). Syntactic complexity and competition: the singular-plural distinction in Western Armenian. *Linguistic Inquiry*, 45:1–26.

Biggs, A. and Zhuosi, L. (2022). Adjective classifiers in Shantou Teochew. In Kim, S., Kurtz, N., Hewett, M., and Kasper, C., editors, *Chicago Linguistic Society (CLS) 56*, pages 25–36, Chicago. Chicago Linguistic Society.

Binnick, R. (1979). On the classification of the Mongolian languages. *Central Asiatic Journal*, 31:178–195.

Binnick, R. (2011). *The Past Tenses of the Mongolian Verb: Meaning and Use*. Brill.

Bobaljik, J. (2012). *Universals in Comparative Morphology*. MIT Press, Cambridge, MA.

Bobaljik, J. and Harley, H. (2017). Suppletion is local: Evidence from Hiaki. In Newell, H., Noonan, M., Piggott, G., and Travis, L., editors, *The Structure of Words at the Interfaces*, pages 141–159. Oxford University Press, UK.

Bonet, E. (2013). Agreement in two steps (at least). In Matushansky, O. and Marantz, A., editors, *Distributed Morphology Today: Morphemes for Morris Halle*, pages 167–184. MIT press, Cambridge, MA.

Borer, H. (2005). *Structuring Sense*, volume 1: *In Name Only*. Oxford University Press, Oxford.

Borer, H. and Ouwayda, S. (2021). Divide and counter. In Kiss, T., Pelletier, J., and Husić, H., editors, *Things and Stuff: The Semantics of the Mass-Count Distinction*, pages 115–150. Cambridge University Press.

Bowers, J. (2001). Predication. In Baltin, M. and Collins, C., editors, *The Handbook of Contemporary Syntactic Theory*, pages 299–333. Blackwell.

Bresnan, J. (1973). Syntax of the comparative clause construction in English. *Linguistic Inquiry*, 4:275–343.

Bunt, H. (1979). Ensembles and the formal semantic properties of mass terms. In Pelletier, J., editor, *Mass Terms: Some Philosophical Problems*, pages 249–277. Reidel, Dordrecht.

Bunt, H. (1985). *Mass Terms and Model-Theoretic Semantics*. Cambridge University Press, New York.

Bylinina, L. and Podobryaev, A. (2020). Plurality in Buriat and structurally constrained alternatives. *Journal of Semantics*, 37:117–128.

Cartwright, H. (1975). Amounts and measures of amount. *Noûs*, 9:143–163.

Chierchia, G. (1998a). Plurality of Mass Nouns and the Notion of "Semantic Parameter". In Rothstein, S., editor, *Events and Grammar*, pages 53–104. Kluwer Academic Publishers.

Chierchia, G. (1998b). Reference to kinds across languages. *Natural Language Semantics*, 6(4):339–405.

Chierchia, G. (2010). Mass nouns, vagueness and semantic variation. *Synthese*, 174:99–149.

Chierchia, G. (2013). *Logic in Grammar: Polarity, Free Choice, and Intervention*. Oxford University Press, Oxford.

Chomsky, N. (1981). *Lectures on Government and Binding*. Foris, Dordrecht.

Chomsky, N. (1994). *Bare Phrase Structure*. MIT press, Cambridge, MA.

Chomsky, N. (1995). *The Minimalist Program*. MIT Press, Cambridge, MA.

Chomsky, N. (2000). Minimalist inquiries: the framework. In Martin, R., Michaels, D., and Uriagereka, J., editors, *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*, pages 89–156. MIT Press, Cambridge, MA.

Chomsky, N. (2001). Derivation by phase. In Kenstowicz, M., editor, *Ken Hale: A Life in Linguistics*, pages 1–52. MIT Press, Cambridge, Massachusetts.

Chomsky, N. (2008). On Phases. In Freidin, R., Otero, C., and Zubizarreta, M. L., editors, *Foundational Issues in Linguistic Theory: Essays in Honor of Jean-Roger Vergnaud*, pages 133–166. MIT Press, Cambridge, MA.

Cinque, G. (2005). Deriving Greenberg's Universal 20 and its exceptions. *Linguistic Inquiry*, 36:315–332.

Cinque, G. (2010). *The Syntax of Adjectives*. MIT press, Cambridge, MA.

Cinque, G. (2023). *On Linearization*. MIT Press, Cambridge, MA.

Cleani, A. M. and Toquero-Pérez, L. M. (2022). Debunking multiform dimensionality: *many*, Romance *tant*-PL, & morpho-syntactic opacity. In Starr, J., Kim, J., and Öney, B., editors, *Semantics and Linguistic Theory (SALT) 32*, pages 705–726. CLC Publications.

Collins, C. and Postal, P. (2014). *Classical NEG Raising: An Essay on the Syntax of Negation*. MIT Press, Cambridge, MA.

Corbett, G. (2000). *Number*. Cambridge University Press.

Corver, N. (1990). *The Syntax of Left Branch Extractions*. PhD thesis, Katholieke Universiteit Brabant.

Corver, N. (2021). Inflected intensifiers: The structure-dependence of parasitic agreement. In Bárány, A., Biberauer, T., Douglas, J., and Vikner, S., editors, *Syntactic architecture and its consequences III: Inside syntax*, pages 185–217. Language Science Press, Berlin.

Cowper, E. (2005). A note on Number. *Linguistic Inquiry*, 36:441–445.

Cowper, E. and Hall, D. C. (2009). Argumenthood, pronouns, and nominal feature geometry. In Ghomeshi, J., Paul, I., and Wiltschko, M., editors, *Determiners: Universals and Variation*, pages 97–120. John Benjamins, Amsterdam.

Cowper, E. and Hall, D. C. (2012). Aspects of individuation. In Massam, D., editor, *Count and Mass across Languages*, pages 27–53. Oxford University Press, Oxford, UK.

Cresswell, M. (1976). The semantics of degree. In Partee, B., editor, *Montague Grammar*, pages 261–292. Academic Press.

Csirmaz, A. and Dékány, É. (2014). Hunagrian is a classifier language. In Simone, R. and Masini, F., editors, *Word Classes: Nature, Typology and Representation*, pages 141–160. John Benjamins.

Dayal, V. (2004). Number marking and indefiniteness in kind terms. *Linguistics and Philosophy*, 27:393–450.

Dayal, V. (2011). Hindi pseudo-incorporation. *Natural Language and Linguistic Theory*, 29:123–167.

Deal, A. R. (2016a). Do all languages make countability distinctions? evidence from Nez Perce. In Bade, N., Berezovskaya, P., and Schöller, A., editors, *Sinn und Bedeutung 20*, pages 180–197, University of Konstanz.

Deal, A. R. (2016b). Plural exponence in the Nez Perce DP: a DM analysis. *Morphology*, 26:313–339.

Deal, A. R. (2017). Countability distinctions and semantic variation. *Natural Language Semantics*, 25:125–171.

Deal, A. R. (2019). Raising to ergative: Remarks on applicatives of unaccusatives. *Linguistic Inquiry*, 50:388–415.

Dékány, É. (2021). *The Hungarian Nominal Functional Sequence*. Studies in Natural Language and Linguistic Theory. Springer.

Déprez, V. (2005). Morphological number, semantic number and bare nouns. *Lingua*, 115:857–833.

Dowty, D. (1979). *Word Meaning and Montague Grammar: The Semantics of Verbs and Times in Generative Semantics and in Montague PTQ*. Studies in Linguistics and Philosophy. Reidel Publishing Company, Dordrecht.

Embick, D. (2007). Blocking Effects and analytic/synthetic alternations. *Natural Language and Linguistic Theory*, 25(1):1–37.

Embick, D. (2010). *Localism versus Globalism in Morphology and Phonology*. MIT Press, Cambridge, MA.

Embick, D. (2015). *The Morpheme: A Theoretical Introduction*. Interface Explorations. Mouton de Gruyter.

Embick, D. and Marantz, A. (2008). Architecture and blocking. *Linguistic Inquiry*, 39:1–53.

Embick, D. and Noyer, R. (2001). Movement operations after syntax. *Linguistic Inquiry*, 32:555–595.

Erlewine, M. Y. (2020). Anti-locality and subject extraction. *Glossa: A Journal of General Linguistics*, 5:1–38.

Farkas, D. and de Swart, H. (2003). *The Semantics of Incorporation*. CSLI Publications.

Farkas, D. and de Swart, H. (2010). The semantics and pragmatics of plurals. *Semantics and Pragmatics*, 3:1–54.

Fong, S. (2019). Proper movement through Spec-CP: An argument from hyperraising in Mongolian. *Glossa: a journal of general linguistics*, 4:1–42.

Fong, S. (2021). The syntax of plural marking: The view from bare nouns in Wolof. In Docekal, M. and Wągiel, M., editors, *Formal Approaches to Number in Slavic and Beyond*, pages 129–148. Language Science Press, Berlin.

Fong, S. (2023). Feature licensing and the number interpretation of bare nominals in Wolof. *Glossa: A Journal of General Linguistics*, 8:1–46.

Gillon, B. (1992). Towards a common semantics for English count and mass nouns. *Linguistics and Philosophy*, 15:597–639.

Gillon, B. (1999). The lexical semantics of English count and mass nouns. In Viegas, E., editor, *The Breadth and Depth of Semantic Lexicons*, volume 10 of *Text, Speech and Language Technology*, pages 19–37. Kluwer.

Gong, M. (2021). Postsyntactic lowering and linear relations in Dagur noun phrases. *Glossa: A Journal of General Linguistics*, 6:1–29.

Gong, M. (2022). *Issues in the Syntax of Movement: Cross-Clausal Dependencies, Reconstruction, and Movement Typology*. PhD thesis, Cornell University.

Grimm, S. (2010). Number and markedness: A view from Dagaare. In Prinzhorn, M., Schmitt, V., and Zobel, S., editors, *Sinn und Bedeutung 14*, pages 168–184.

Grimm, S. (2012). *Number and Individuation*. PhD thesis, Stanford University.

Grimm, S. (2018). Grammatical number and the scale of individuation. *Language*, 94:527–574.

Guerzoni, E. (2006). Intervention effects on NPIs and feature movement: Towards a unified account of intervention. *Natural Language Semantics*, 14:359–398.

Guntsetseg, D. (2016). *Differentian Case Marking in Mongolian*. Harrassowitz Verlaf Wiesbaden.

Hackl, M. (2000). *Comparative Quantifiers*. PhD thesis, MIT.

Halle, M. and Marantz, A. (1993). Distributed Morphology and the pieces of inflection. In Hale, K. and Keyser, S. J., editors, *The View from Building 20*, pages 111–176. MIT Press, Cambridge, MA.

Harbour, D. (2007). *Morphosemantic Number: From Kiowa Noun Classes to UG Number Features*. Studies in Natural Language and Linguistic Theory. Springer.

Harbour, D. (2011). Valence and atomic number. *Linguistic Inquiry*, 42:561–594.

Harbour, D. (2014). Paucity, abundance and the theory of number. *Language*, 90:185–229.

Harbour, D. (2016). *Impossible Persons*. MIT Press.

Harley, H. (2014). On the identity of roots. *Theoretical Linguistics*, 40:225–276.

Harley, H. and Noyer, R. (1998). Licensing in the non-lexicalist lexicon: Nominalizations, vocabulary items and the encyclopaedia. *MIT Working Papers in Linguistics*, 32:119–137.

Harley, H. and Noyer, R. (1999). Distributed morphology (state-of-the-article). *Glot International*, 4:3–9.

Heim, I. (2001). Degree operators and scope. In Fery, C. and Sternefeld, W., editors, *Audiatur Vox Sapientiae. A Festschrift for Arnim von Stechow*, pages 214–239. Akademie Verlag, Berlin.

Heim, I. and Kratzer, A. (1998). *Semantics in Generative Grammar*. Blackwell, Malden, MA.

Ionin, T. and Matushansky, O. (2006). The composition of complex cardinals. *Journal of Semantics*, 23:315–360.

Ionin, T. and Matushansky, O. (2018). *Cardinals: The Syntax and Semantics of Cardinal-Containing Expressions*. MIT Press, Cambridge, MA.

Janhunen, J. (2012). *Mongolian*. John Benjamins, Amsterdam.

Kalomoiros, A. (2021). Bare singulars and pseudo-incorporation in Western Armenian. In Dreier, N., Kwon, C., Darnell, T., and Starr, J., editors, *Semantics and Linguistic Theory (SALT) 31*, pages 365–384. CLC Publications.

Kiparsky, P. (1973). "Elsewhere" in Phonology. In Anderson, S. and Kiparsky, P., editors, *A Festschrift for Morris Halle*, pages 93–106. Holt, Rinehart and Winston, New York.

Kouneli, M. (2017). The morphological expression of nominal number in Kalenjin. In Lamont, A. and Tetzloff, editors, *North East Linguistic Society (NELS) 47*, volume 2, pages 167–176. GLSA.

Kouneli, M. (2020). Number-based noun classification: The view from Kipsigis. *Natural Language and Linguistic Theory*, 39:1195–1251.

Kramer, R. (2015). *The Morphosyntax of Gender*. Oxford University Press.

Kramer, R. (2017). General number nouns in Amharic lack NumP. In Ostrove, J., Kramer, R., and Sabbagh, J., editors, *Asking the Right Questions: Essays in Honor of Sandra Chung*, pages 39–54. Linguistics Research Center, UC Santa Cruz.

Krifka, M. (1989). Nominal reference, temporal constitution and quantification in event semantics. In Bartsch, R., van Benthem, J., and van EmbdeBoas, P., editors, *Semantics and Contextual Expression*, pages 75–115. CSLI Publications, Standord, CA.

Krifka, M. (1995). Common nouns: A contrastive analysis of English and Chinese. In Carlson, G. and Pelletier, J., editors, *The Generic Book*, pages 398–411. University of Chicago Press, Chicago.

Krifka, M. (1997). The expression of quantization (boundedness). Paper presented on workshop on *Cross-linguistic Variation in Semantics*. LSA Summer Institute.

Lee, T. T.-M. (2023). Last but not least: a comparative perspective on right dislocation in Alasha Mongolian. *Journal of East Asian Linguistics*, 32:459–495.

Link, G. (1983). The logical analysis of plurals and mass terms: A lattice-theoretical approach. In Bäuerle, R., Schwarze, C., and von Stechow, A., editors, *Meaning, Use and Interpretation of Language*, pages 302–323. De Gruyter, Berlin.

Marantz, A. (1997). No escape from syntax: Don't try morphological analysis in the privacy of your own lexicon. In Dimitriadis, A., Siegel, L., Surek-Clark, C., and Williams, A., editors, *University of Pennsylvania Working Papers in Linguistics*, pages 201–225. University of Pennsylvania.

Marantz, A. (2001). Words and things. Handout of talk given at MIT.

Marantz, A. (2013). Locality domains for contextual allomorphy across the interfaces. In Matushansky, O. and Marantz, A., editors, *Distributed Morphology Today: Morphemes for Morris Halle*, pages 95–115. MIT Press.

Martí, L. (2008). The semantics of plural indefinites in Spanish and Portuguese. *Natural Language Semantics*, 16:1–37.

Martí, L. (2020a). Inclusive plurals and the theory of number. *Linguistic Inquiry*, 51:37–74.

Martí, L. (2020b). Numerals and the theory of number. *Semantics and Pragmatics*, 13:1–57.

Massam, D. (2001). Pseudo noun incorporation in Niuean. *Natural Language and Linguistic Theory*, 19:153–197.

Mathieu, E. (2012). Flavors of division. *Linguistic Inquiry*, 43:650–679.

Mathieu, E. and Dali, M. (2021). *A Theory of Distributed Number*. John Benjamins, Amsterdam.

McCawley, J. (1979). Lexicography and the count-mass distinction. In McCawley, J., editor, *Adverbs, Vowels and Other Objects of Wonder*, pages 165–173. University of Chicago Press.

Müller, A. (2002). Genericity and the denotation of common nouns in Brazilian Portuguese. *Probus*, 2:279–298.

Norris, M. (2014). *A Theory of Nominal Concord*. PhD thesis, UC Santa Cruz.

Norris, M. (2017a). Description and analyses of nominal concord (pt i). *Language and Linguistic Compass*, 11:1–15.

Norris, M. (2017b). Description and analyses of nominal concord (pt ii). *Language and Linguistic Compass*, 11:1–20.

Nurmio, S. (2016). Collective nouns in Welsh: A noun category of a plural allomorph? *Transactions of the Philological Society*, 115:58–78.

Ouwadaya, S. (2014). *Where Number Lies: Plural Marking, Numerals, and the Collective–Distributive Distinction.* PhD thesis, University of Southern California.

Pancheva, R. (2022). Determiner vs. adjectival numerals and nominal number. In Stockall, L., Martí, L., Adger, D., Roy, I., and Ouwayda, S., editors, *For Hagit: A Celebration*, volume 47, pages 1–10. Queen Mary Occasional Papers in Linguistics.

Pancheva, R. (2023). Morphosyntactic variation in numerically-quantified noun phrases in Bulgarian. *Journal of Slavic Linguistics*, 31, FASL 30 issue:1–18.

Poppe, N. (1955). *Introduction to Mongolian Comparative Studies.* Suomalais-ugrilainen Seura, Helsinki.

Poppe, N. (1970). *Mongolian Language Handbook.* Center for Applied Linguistic University of Vienna, Vienna.

Quine, W. V. O. (1960). *Word and Object.* MIT press, Cambridge, MA.

Ritter, E. (1991). Two functional categories in noun phrases: Evidence from Modern Hebrew. In Rothstein, S., editor, *Syntax and Semantics 25: Perspectives on Phrase Structure: Heads and Licensing*. Academic Press.

Ritter, E. (1993). Where's Gender? *Linguistic Inquiry*, 24:795–803.

Sauerland, U. (2003). A new semantics for number. In Young, R. and Zhou, Y., editors, *Proceedings of Semantics and Linguistic Theory (SALT) 13*, pages 258–275. CSLI Publications.

Sauerland, U., Anderssen, J., and Yatsuhiro, K. (2005). The plural is semantically unmarked. In Kepser, S. and Reis, M., editors, *Linguistic Evidence: Empirical, Theoretical and Computational perspectives*, Studies in Generative Grammar, pages 413–434. De Gruyter.

Sağ, Y. (2022). Bare singulars and singularity in Turkish. *Linguistics and Philosophy*, 45:741–793.

Schwarzschild, R. (2006). The role of dimensions in the syntax of noun phrases. *Syntax*, 9:67–110.

Schwarzschild, R. (2011). Stubborn distributivity, multiparticipant nouns and the count/mass distinction. In Lima, S., Mullin, K., and Smith, B., editors, *North East Linguistic Society (NELS) 39*, pages 661–678, Amherst, MA. GSLA.

Schwarzschild, R. (2023). Pure event semantics. Accepted at *Philosophical Perspectives*.

Scontras, G. (2013). Accounting for counting: A unified semantics for measure terms and classifiers. In Snider, T., editor, *Semantics and Linguistic Theory (SALT) 23*, pages 549–569. CLC Publications.

Scontras, G. (2014). *The Semantics of Measurement.* PhD thesis, Harvard University.

Scontras, G. (2022). On the semantics of number morphology. *Linguistics and Philosophy*, 45:1165–1196.

Smith, P. (2021). *Morphology–Semantics Mismatches and the Nature of Grammatical Features.* John Benjamins.

Spector, B. (2007). Aspects of the pragmatics of plural morphology: On higher-order implicatures. In Sauerland, U. and Stateva, P., editors, *Presupposition and Implicature in Compositional Semantics*, pages 243–281. Palgrave Macmillan UK, London.

Stowell, T. (1981). *Origins of Phrase Structure.* PhD thesis, MIT.

Svenonius, P. (1994). *Dependent Nexus: Subordinate Predication Structures in English and the Scandinavian Languages.* PhD thesis, University of California, Santa Cruz.

Svenonius, P. (2008). The position of adjectives and other phrasal modifiers in the decomposition of DP. In McNally, L. and Kennedy, C., editors, *Adjectives and Adverbs: Syntax, Semantics and Discourse*, Oxford Studies in Theoretical Linguistics, pages 16–42. Oxford University Press.

Tamba, K., Torrance, H., and Zimmermann, M. (2012). Wolof quantifiers. In Keenan, E. and Paperno, D., editors, *Handbook of Quantifiers in Natural Language*, volume 1 of *Studies in*

Linguistics and Philosophy, pages 891–840. Springer, Dordrecht.

Toquero-Pérez, L. M. (2023). The syntax of individuating and measuring pseudo-partitives in Alasha Mongolian. *Journal of East Asian Linguistics*, 32:551–593.

Toquero-Pérez, L. M. (2024). *The Grammar of Individuation, Number and Measurement*. PhD thesis, University of Southern California.

von Heusinger, K. and Kornflit, J. (2017). Partitivity and case marking in Turkish and related languages. *Glossa: A Journal of General Linguistics*, 2:1–40.

von Stechow, A. (1984). Comparing semantic theories of comparison. *Journal of Semantics*, 3:1–77.

Wellwood, A. (2018). Structure preservation in comparatives. In Maspong, S., Bryndhildur, S., Blake, K., and Davis, F., editors, *Semantics and Linguistic Theory (SALT), 28*, pages 78–99. CSLI Publications.

Wellwood, A., Hacquard, V., and Pancheva, R. (2012). Measuring and Comparing Individuals and Events. *Journal of Semantics*, 29:207–228.

Wiltschko, M. (2014). *The Universal Structure of Categories: Towards a Formal Typology*. Cambridge University Press, Cambridge.

Wiltschko, M. and Ritter, E. (2015). Animating the narrow syntax. *The Linguistic Review*, 32:869–908.

Wood, J. (2016). How roots do and don't constrain the interpretation of Voice. *Working Papers in Scandinavian Syntax*, 96:1–25.

Wood, J. (2023). *Icelandic Nominalizations and Allosemy*. Oxford University Press (to appear).

Zweig, E. (2009). Number-neutral bare plurals and the multiplicity implicature. *Linguistics and Philosophy*, 32:353–407.